# SECTION C - STATEMENT OF WORK

## C.1 GENERAL OVERVIEW

### C.1.1 Purpose of This Solicitation

Skilled staff, tools, and other resources are needed to undertake all phases of United States Patent and Trademark Office's (PTO) Life Cycle Management for Automated Information Systems. The services needed include system design and analysis, programming, testing, customer training (to include technical personnel), implementation, transition to operations, system/software maintenance, project-specific system/software engineering, business process reengineering, information engineering, product assurance, project management, and other related services and products. Software products and incidental hardware are needed for system life cycle support of development, maintenance, and enhancement activities.

The PTO proposes to develop and maintain PTO automated information systems using a combination of in-house personnel, contract staff, Government Furnished Equipment, and other resources as appropriate. This Statement of Work is for System Development and Maintenance (SDM) contractors to provide skilled staff and the managerial and technical resources to develop, modify, maintain, reengineer, enhance, and/or provide specialized technical assistance for automated information systems that support all PTO business functions. The contracts also will be used to identify and acquire Commercial-Off-The-Shelf (COTS) software applications or products that support the system development life cycle.

### C.1.2 PTO Mission and Organization

The mission of the Patent and Trademark Office (PTO) is to (1) promote and protect inventiveness and technological progress pursuant to patent laws enacted by Congress; (2) administer the federal laws relating to the registration of trademarks; and (3) help represent the United States in international efforts on patent and trademark policy, and fulfill obligations incurred under any applicable international treaty. The primary PTO functions are to examine patent and trademark applications and grant patents and registrations when applicants are entitled to them under the law; to publish and disseminate patent and trademark information, record assignments of patents and trademarks, maintain search files of U.S. and foreign patents and trademarks, and a patent and trademark search center for public use; to advise and assist the bureaus and offices of the Department of Commerce and other agencies of the Government in matters involving intellectual property; and to sell copies of patents, trademarks and official records to the public.

To meet these responsibilities effectively, the PTO must conduct a meaningful examination of all applications expeditiously; publish granted patents and registered trademarks promptly as examination is completed; organize and make available technical information so that it may be used by patent and trademark examiners and the public; provide support services to examiners; and provide service to the research and development community. Chapter 2 of the "PTO Strategic Information Technology Plan

for Fiscal Years 1995-2000" (refer to Section J) provides a high-level description of the current organizational structure formed to accomplish the PTO mission.[1]

### C.1.3 Overview of Current PTO Processes and Systems

In support of the mission, the PTO is responsible for the accessibility, accuracy, and integrity of 36 million patent and patent related documents (referred to as the search files) and 1,597,362 marks (720,545 marks are current registrations and 179,910 marks are pending applications). The PTO now receives approximately 190,000 U.S. and Patent Cooperation Treaty (PCT) patent and 155,000 trademark applications annually, expects to receive approximately 250,000 patent applications annually by the end of this century, and expects patent files to grow by 2 million documents per year by the end of this century.

Patent and trademark applications arrive at the PTO and are received in the mailroom. Mailroom processing includes creating the physical "file wrapper" (which will contain the application, associated documents, and correspondence), checking that fees have been paid, and performing initial categorization of the application. Patent processes are primarily manual and paper-based, with automation support for input to the computer systems which track the location and status of applications. Automated information system support of trademark processing includes all text and images necessary to publish the trademark portion of the Official Gazette, and automation support which tracks the location and status of applications.

The application is then sent to a Patent Examiner or a Trademark Attorney for examination. Examination proceeds with the use of automated tools (Messenger and X-Search systems) which support searching the existing patent and trademark data for information relevant to the application. The application itself, in its file wrapper, is moved from office to office as examination proceeds. An examiner or attorney will interact with the applicant via telephone, mail, or other means; notes and formal correspondence are filed with the application. The position (physical location) and status of the application are tracked with the Patent Application Location Management (PALM) and Trademark Application Management (TRAM) computer systems. Upon successful prosecution, a patent is granted or a trademark is registered; the patent or trademark is published in the Official Gazette and a certificate is placed in the data files. At this point, it is available for dissemination to the public via print requests, on-line searches, CD-ROM, or other distribution methods.

All patent and trademark application processing is performed at the PTO's headquarters currently located in Arlington, Virginia. PTO's hardware and software environment supporting this processing is extremely diverse and encompasses a wide assortment of technologies, ranging from mainframes and mid-range computing platforms to workstations, microcomputers, terminals, and bar-code readers. Components are connected by both dedicated and general-purpose networks and provide a wide range of software services to the PTO and its customers. The hardware and software are organized around several major systems, which are briefly described in this section (the Strategic Information Technology

[1] NOTE: Chapter 2 of the newly released "PTO Strategic Information Technology Plan for Fiscal Years 1996-2001" (refer to Section J) also provides a high-level description.

Plan in Section J contains further detailed information on these systems). The environment also includes numerous office automation applications running on Intel-based microcomputers.

- Patent examination and searching is based on the assignments of patents to classes and subclasses of technology or "art." The Classification Data System (CDS) supports the process of defining these classes and subclasses and of assigning individual patents to them.

- Monochrome images of patents are managed and retrieved by the Classified Search and Image Retrieval (CSIR) system, which can use the results of a text search (the Messenger system) to identify the images to be retrieved. Patent images are stored on cache devices, on Rapid Access Devices (RADs), and on High Density Devices (HDDs). Images are available at both 150 dpi and 300 dpi.

  The 150 dpi images are stored on the RADs (LMSI and Optimem Optical Disk Drives) which are the primary source of images. The 300 dpi images are stored on the HDDs (Sony Optical Disk Jukebox) which act as backups for the RADs and as the primary source for printed images. The optical storage systems are supported by Sun UNIX-based workstations. Images are cached to provide more rapid retrieval of frequently or recently accessed images.

- PTOnet links all the buildings on the PTO campus using a backplane linking multiple FDDI rings which, in turn, link Ethernet subnetworks. An IBM 3745 Front End Communications Processor which provides X.25 wide area network services via a public dialup service supporting 128 calls and an FTS 2000 service gives the Patent and Trademark Depository Libraries (PTDLs) direct connection to the Amdahl for text searching. Four X.25 gateway units provide direct dialout modem connection to Tymnet and commercial databases (*e.g.*, Chemical Abstracts Service, Lexis/Nexis, DIALOG). PTOnet and its subsidiary LANs also support standard office automation functions using COTS word processors, databases, spreadsheets, etc., on a variety of personal computer platforms.

- The Patent Application Location and Monitoring System (PALM) is located throughout the PTO campus. PALM is a transaction processing system that tracks the location, status, and history of patent applications, maintaining records for each application and examiner, and providing Patent Examiners and managers the information needed to efficiently manage the patent examination process. It operates on a Unisys A-16 mainframe with approximately 1520 terminals on line for access, query, search, update, and reporting. PALM includes the PALM software and database, telecommunications system, terminals, Unisys B-28 and B-38 microcomputers, printers and bar-code equipment. The PALM telecommunications network uses the Burroughs (Unisys) Poll-Select protocol stack and has wiring to connect the different floors and buildings to the mainframe.

- The Trademark Application Monitoring System (TRAM) is similar to PALM in that it tracks and stores data about the location and status of applications for trademarks.

- Trademark's X-Search 1.0 provides text and image search functions for Trademark Attorneys examining a trademark application. The search and retrieval functions are provided by a text search system (Orbit) running on the Amdahl; related images are retrieved from a Novell file server. A Windows client runs on microcomputers attached to PTOnet; the client provides search interface functions. PTO is currently in the process of replacing the text search product, Orbit.

- The Automated Biotechnology Sequencing System (ABSS) stores and provides searching functions for DNA and RNA sequences which are the subject of patent applications. The sequences are received on floppy disk, processed, and stored. Since the ABSS contains extremely sensitive patent application data, it is run as a Department of Commerce certified secure system. It makes use of dedicated Sun SPARC systems, microcomputers, a dedicated network, and a MASPAR massively parallel processor to search for and compare DNA/RNA sequences.

- The Patent and Trademark Assignment System (PTAS) provides an automated image-based work-flow system for handling assignments for both patents and trademarks. PTAS runs on the Netframe and the Unisys A-16.

- Patent and Trademark Copy Sales (PTCS) provides printed copies of granted patents and trademarks for sale to the public. It consists of an order-entry system which combines orders for retrieval of the 300 dpi images for printing on high-speed printers.

- Additional high-speed laser printers are used for printing patents and copies of patents for use by Examiners and for sale to the public.

Administrative and other PTO service organizations support PTO's revenue producers (patent and trademark professionals) by developing policies and programs to efficiently and effectively manage PTO's financial and human resources. These organizations fall into one of three categories: Finance, Planning, and Personnel; Information Dissemination; or Chief Information Officer.

- *FINANCE, PLANNING, AND PERSONNEL:* Organizations within this category are supported by six major automated information systems -- Cash Receipts/Deposit Account (CRDA) system, Federal Finance System (FFS), Operating Plans, Time and Attendance, Payroll and Personnel, and the Equal Employment Opportunity Monitoring and Analysis System (EEOMAS). Additionally, these organizations have numerous miscellaneous microcomputer-based tools, spreadsheets, and databases used by individuals to support their own activities and projects. Each of the major automated information systems (AISs) operates on a different computing platform. PTO has three of its major systems using three different mainframes, each operated by a different Federal agency. Accounting is operated at the US Geological Survey, Payroll/Personnel is operated at the National Finance Center (NFC) run by the Department of Agriculture, and CRDA is operated by the PTO. Two other AISs operate on standalone microcomputers, while the last is located on a server linked to PTOnet. None of the systems are integrated with the others.

- *INFORMATION DISSEMINATION:* Information dissemination organizations make intellectual property information available, and create and increase public awareness of the value of PTO programs and information resources. PTO makes information available by providing services and products from its headquarters offices, by supporting regional facilities such as the Patent and Trademark Depository Libraries, and by encouraging the development of commercial products and services. PTO ensures customers have access to its data through a variety of products and services, including on-line services, CD-ROMs and magnetic tapes, and statistical reports; some of these products and services are available to the public directly, while some are offered only at the public search facilities in Arlington, Virginia, and at Patent and Trademark Depository Libraries throughout the country.

- *CHIEF INFORMATION OFFICER:* Automated Information Systems (AISs) are playing an increasingly important role in support of PTO programs and objectives. Many of the PTO's management information and day-to-day operating processes are automated and dependent on the availability of adequate information technology resources for support. There will continue to be rapidly developing and diverse opportunities to employ information technology to improve how the PTO conducts its business. Increasing reliance on these AISs and accelerating requirements for information technology resources are projected within the PTO; the PTO plans to spend nearly $840 million during the FY95-FY00 period on information technology. The Chief Information Officer develops and maintains PTO AISs, provides specialized technical support, operates and maintains hardware and system software, and acquires the necessary resources to support all automation-related functions.

PTO plans to reengineer the processes to take advantage of information technology where practical and cost effective (which is fundamental to the further development of PTO's automated information systems framework). Basic elements of this development will include:

- transition to submission of electronic (as opposed to paper-based) applications and documents, and bi-directional communication with applicants;

- internal use of electronic formats for all applications and documents (including those submitted on paper);

- increased public access to public data contained in PTO databases;

- attendant requirements for additional levels of on-line security;

- expansion of the search databases to include global patents and non-patent data;

- potential for publication of patent applications at 18 months from submission in accordance with worldwide practice and pending legislation;

- evolution of the architecture from proprietary solutions to an open systems environment and defined interfaces, to facilitate interaction between PTO systems and third-party software.

PTO has created a disciplined system development life cycle management process which integrates business process reengineering into each life cycle phase. PTO is creating an environment where business process reengineering tasks are integral to system design and development. PTO also requires that models and other business process reengineering outputs be used in their original digital form in the follow-up phases of the life cycle. PTO intends to hold the same contractor accountable for the successful transition between life cycle management phases, not just for producing the output of a specific phase. PTO has established a number of mechanisms to mitigate the impact of risks, including:

- An expert business process reengineering staff has been created within PTO to establish the strategy and methodology for business process reengineering, and to establish the format and style of business process reengineering products.

- On all PTO business process reengineering projects, a high-level subject matter expert is designated as the project manager at project initiation.

- Contractor support for business process reengineering is for facilitation and model capture, not for project leadership or decisionmaking. Leadership and decisionmaking functions are always performed by PTO in-house staff.

- For all business process reengineering projects, PTO establishes a management hierarchy for decisionmaking. As an example, for the patent reengineering project, there is a project manager from the Patent Corps, five senior executives from the Patent Corps are the leaders for the 5 sub-teams, and a steering committee of PTO executives is established and meets routinely to review progress against milestones.

- PTO has established a rigorous economic analysis process, and has placed the responsibility for it in the business process reengineering office in order to closely tie business decisions to a sound economic basis.

- PTO has integrated business process reengineering into the life cycle management manual. In addition to the economic analysis, the business process reengineering function is responsible for TO-BE models; identifying information needs; business transition planning; developing goals, objectives, and performance measures; and post-deployment evaluation to determine whether performance measures have been achieved.

PTO also plans to address current information technology challenges and problems that are typical of a large organization. Such areas include developing automated systems for functions that currently are performed manually; transitioning individual legacy systems into one or more up-to-date, integrated systems; modifying and upgrading older automated information systems that have been patched many times; systematically transitioning automated information system development and maintenance activities to take advantage of automated tool capabilities and an integrated data dictionary; and reducing

the possibility of software deficiencies through the use of industry-standard software engineering practices and procedures.

### C.1.4 Overview of Automation-Related Support of PTO Business Processes by the SDM Contractor

The PTO has and will continue to develop and maintain its AISs using a combination of contract and in-house staff, generally providing or acquiring Government Furnished Equipment and COTS components needed for those systems. The functions to be **performed by the SDM contractors** are--

- *DEVELOP AND MAINTAIN SYSTEMS:* Skilled staff, tools, and other resources are needed to undertake all phases of PTO's LCM for AISs. The services needed include system design and analysis, customer training (to include technical personnel), system/software maintenance, project-specific system engineering, business process reengineering, and information/software engineering, product assurance, project management, and other related services and products.

- *ACQUIRE NECESSARY RESOURCES* (system life cycle software and incidental hardware required for development and maintenance): The SDM contractors will perform or assist the Government in performing presolicitation studies, preparing solicitation documents, and acquiring system development and COTS application products as necessary for Government use and that will be Government owned or leased. Alternative acquisition approaches will be analyzed, but most or all of these acquisitions are now expected to be from existing Government contracts, small purchase requests, and/or competitive procurements. Resources to be acquired are COTS software products and incidental hardware needed for system life cycle support of development and maintenance activities.

Other automation functions that the SDM contractors may **interact with** (but will not be tasked to perform under this contract) include the following:

- *DEVELOP AND MAINTAIN SYSTEMS:* Skilled staff, tools, and other resources are needed to develop, implement, and manage the implementation of necessary strategic and tactical plans; develop PTO standards and guidelines such as the Life Cycle Management for Automated Information Systems (LCM-AIS) Manual, Technical Standards and Guidelines (TSGs), and the Technical Reference Model; maintain enterprise models and architecture; and define the requirements governing the overall integration of new and reengineered systems with existing PTO systems. This function is supported primarily using in-house personnel, with secondary support provided by contractors obtained through agreements with other federal agencies, 8(a) contracts, or small purchase contracts.

- *ACQUIRE NECESSARY RESOURCES* (PTO infrastructure and other Government Furnished Equipment (GFE)): Skilled staff are needed to perform presolicitation studies (Requirements Analysis, Alternatives Analysis), prepare solicitation documents, and acquire resources (labor, hardware, software, telecommunications) using existing

Government contracts, small purchase requests, Interagency Agreements, and/or competitive procurements. Consolidated acquisitions are planned for scanners, POSIX compliant processors, magnetic and/or optical storage devices, printers, workstations, and possibly other components. Alternative acquisition approaches will be analyzed, but most or all of these acquisitions are now expected to be full and open competition using RFPs developed primarily by in-house personnel, with specialized assistance from technical support contractors and personnel from other federal agencies. Depending upon the scope of a contract, contractors may be required to perform required acquisition activities to procure incidental resources necessary to accomplish contract activities.

- *PROVIDE SPECIALIZED TECHNICAL SUPPORT:* Skilled staff are needed to perform independent and procurement-sensitive analyses, conduct security and risk assessments, support quality assurance efforts including independent validation and verification of products delivered by the contractors, support project management, and provide other technical support. This function is supported using in-house personnel or contractors. PTO has existing contracts and/or agreements with other federal agencies for Systems Engineering and Technical Assistance (SETA), security, project management assistance, and Independent Verification and Validation (IV&V).

- *OPERATE AND MAINTAIN HARDWARE AND SYSTEM SOFTWARE:* System hardware and system software components are operated and maintained using in-house personnel or contractors. PTO has contracts or will award new contracts for operation and maintenance of most hardware and system software at the option of the PTO. PTO plans to use 8(a) and other contractors for future operations requirements that cannot be performed using in-house staff. PTO has assumed subcontract management responsibility for most hardware and system software that is now provided through the current integration contractor (PRC), and will assume repsonsibility for all remaining PRC subcontracts before the SDM contracts are awarded.

The PTO will establish the strategic and tactical plans, develop the necessary technical standards and Technical Reference Model to be used by the contractor, define the requirements governing the overall integration of new and reengineered systems with existing PTO systems, and provide overall management of the project and programs. The SDM contractors will be accountable for the integration of all individual subsystems for which they are responsible, subject to the overall constraints of the external interfaces. In this context, the SDM contractors are expected to help the PTO structure the systems into subsystems that can be incrementally implemented to facilitate orderly transitions from the current business processes to the target system. The PTO will review these subsystems to ensure consistency with external constraints and careful management of risks.

To support these systems, the contracts also will be used to identify, acquire, test, and install Commercial-Off-The-Shelf (COTS) software applications or products that support the system development life cycle. These products may include Integrated Computer Aided Software Engineering (ICASE) tools, database management system (DBMS), project management, code and test generators and analyzers, and performance monitoring tools. Multiple licenses or a site license may be procured to support concurrent software development and maintenance efforts, as deemed necessary and cost effective.

## C.1.5 Guidelines Used in Providing Automation-Related Support

To accomplish automation functions, PTO developed a set of guidelines and handbooks to enable the effective management of automation projects. An overview of these documents is provided in the table below.

| *Guideline or Handbook* | *Description* |
|---|---|
| Life Cycle Management for Automated Information Systems (LCM-AIS) Manual | Defines the policies, process, and management standards for developing and maintaining automated information systems in the PTO; may be tailored depending on the type of system being developed |
| Technical Standards and Guidelines (TSGs) | Defines the procedures and technical standards for developing and maintaining automated information systems in the PTO consistent with the PTO Life Cycle Management Manual |
| Technical Reference Model | Defines the information technology standards, services, interfaces, supporting data formats, protocols, and standard products to be applied to or used by PTO automated information systems |
| Interim Handbook for the Implementation Level | Defines tasks that need to be performed and documents that need to be prepared, defines test and integration requirements, and provides other details needed to manage the systems developed under the Automated Patent System (APS) contract; although this document will be superseded by the Life Cycle Management Manual and the TSGs, this handbook will be provided to the SDM contractor as a basis for understanding the information that may be provided for maintenance of software/systems developed under previous contract activities |
| Project Management Manual | Defines procedures for planning and monitoring PTO projects and administering contracts, and provides details needed to perform the work listed in the SDM contracts |

All system development projects are tied to the PTO Work Breakdown Structure for System Development (refer to the Project Management Manual in Section J). All project activities must be mapped to level 7 of this WBS. The SDM Contractors shall report actual labor hour and cost data at level 7, to be provided monthly in electronic format.

To plan and monitor all projects, the PTO uses the Control and Analysis Tool (CAT). The PTO uses this system for development of project network schedules and narrative descriptions, what-if analysis, tracking task order deliverables and budgets, and monitoring performance against established baselines. The CAT program management system is compatible with Microsoft Project, Timeline and most other COTS ASCII-based commercial project management and word processing software. The SDM Contractors shall provide data in electronic format that is compatible with the CAT program management system. Further information on this process can be found in chapters 2 and 3 of the PTO Project Management Manual (refer to Section J).

## C.2 SCOPE OF WORK PERTAINING TO THIS CONTRACT

The SDM contractors shall provide the necessary skilled staff, tools, and other resources to analyze, design, develop, deploy, maintain, and enhance United States Patent and Trademark Office (PTO) systems, as specified within individual task orders and in accordance with the PTO guidelines referenced in Section C.1.5 above. The services needed to perform life cycle activities include system design and analysis, programming, testing, customer training (to include technical personnel), implementation, transition to operations, system/software maintenance, project-specific system engineering, business process reengineering, information/software engineering, product assurance, project management, and other related services and products. Software products and incidental hardware are needed for system life cycle support of development, maintenance, and enhancement activities.

This work will be performed for existing automated information systems and those future systems initiated during the contract period of performance. The "PTO Strategic Information Technology Plan for Fiscal Years 1995-2000" (refer to Section J) provides a high-level description of the following programs and systems/projects that PTO anticipates will be supported, at a minimum, by the System Development and Maintenance contracts, grouped into customer categories.[2]

CUSTOMER -- Patent Employees and the Public Requiring Patent Information

- Automated Patent System (APS)
  - Classified Search and Image Retrieval (CSIR)
  - Desktop Workstations
  - Examination Toolbox
  - Classification Data System (CDS)
  - Text Search
  - Global Patents
  - Non-Patent Literature
- Pre-Grant Publication (PGPub) system
- Patent Application Management (PAM) system
  - Patent Application and Location Monitoring (PALM) System
  - PAM
  - Electronic Application System (EASY)
- Other patent systems
  - Appeals Case Tracking System
  - Scientific and Technical Information Center AISs

[2] NOTE: The newly released "PTO Strategic Information Technology Plan for Fiscal Years 1996-2001" (refer to Section J) was not available in time for incorporation of changes prior to release of the RFP. Please note that this new plan provides updated information about the existing and future systems to be supported by the SDM contracts.

CUSTOMER -- Trademark Employees and the Public Requiring Trademark Information

- Automated Trademark System
  - Trademark Application Management (TRAM)
  - Trademark Search (X-Search)
- Trademark Work At Home (TWAH)
- Madrid Protocol
- Trademark Information System (TIS)

CUSTOMER -- Patent and Trademark Employees and the Public

- Patent and Trademark Assignment System (PTAS)
- Patent and Trademark Copy Sales

CUSTOMER -- Financial and Administrative Support Organization Employees

- Equal Employment Opportunity Monitoring and Analysis System (EEOMAS)
- Commerce Administration Management System (CAMS)
- Enhanced Cost and Fee Management System
- Executive Information System (EIS)
- Revenue Account Management (RAM) system and other financial systems
- Development and maintenance support for systems other than those listed above

CUSTOMER -- Information Dissemination Employees and the Public

- On-Line Services
- Electronic Information Products
- New Technology Assessment and Forecast Database (NTAF)
- Automated Fee Collection System and other systems supporting PTO Public Search Facilities

CUSTOMER -- Chief Information Officer and Automated Information System (AIS) Project Personnel

- General contract management
- Generalized Image Service (GIS)
- Document Management System software support, as necessary
- Data management support
- Data administration support
- Data capture support -- developing image and text interfaces between AISs and current PTO systems
- Testing -- Discrepancy Report and Modification Report processing
- Configuration Management product assurance support
- Integrated CASE and other system development and maintenance tool support
- Engineering Studies, System Architecture, and Security support for individual AISs (versus PTO-wide)

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- Project management support, to include project risk management and metrics reporting
- Records management support
- Business Process Reengineering support

The PTO will establish the strategic and tactical plans, develop the necessary technical standards and Technical Reference Model to be used by the contractor, define the requirements governing the overall integration of new and reengineered systems with existing PTO systems, and provide overall management of the project and programs. The SDM contractors will be accountable for the internal integration of individual subsystems subject to the overall constraints of the external interfaces. In this context, the SDM contractors are expected to help the PTO structure the systems into subsystems that can be incrementally implemented to facilitate orderly transitions from the current business processes to the target system. The PTO will review these subsystems to ensure consistency with external constraints and careful management of risks.

To support these systems, the contracts also will be used to identify, acquire, test, and install Commercial-Off-The-Shelf (COTS) software applications or products that support the system development life cycle. These products may include Integrated Computer Aided Software Engineering (ICASE) tools, database management system (DBMS), project management, code and test generators and analyzers, and performance monitoring tools. Multiple licenses or a site license may be procured to support concurrent software development and maintenance efforts, as deemed necessary and cost effective.

## C.3 WORK TO BE PERFORMED UNDER THIS CONTRACT

The SDM contractors shall provide the necessary skilled staff, tools, and other resources to analyze, design, develop, deploy, maintain, and enhance United States Patent and Trademark Office (PTO) systems, as specified within individual task orders and in accordance with the PTO guidelines referenced in Section C.1.5 above. The chart below summarizes the system development life cycle phase work that will be necessary, as specified within individual task orders performed by the SDM contractors. More specific information may be found within the Life Cycle Management for Automated Information Systems (LCM-AIS) Manual and applicable Technical Standards and Guidelines (refer to Section J).

| *Life Cycle Phase* | *Types of Work* |
|---|---|
| Initiation | **System Analysis and Design** -- Although PTO has primary responsibility for activities and documentation associated with this phase, the SDM contractor may be requested to provide technical assistance or develop white papers on specific technical or business topics |

| *Life Cycle Phase* | *Types of Work* |
|---|---|
| Concept | **System Analysis and Design** -- Perform, identify, or review functional and data requirements; and boundary, risk, and economic analyses; prepare supporting documentation, as needed |
| | **Business Process Reengineering and Information/Software Engineering** -- Provide business process reengineering facilitation, modelling, and other required support |
| | **System Analysis and Design** -- Develop AIS support plans |
| | **System Analysis and Design** -- Participate in peer reviews, walkthroughs, or other required meetings |
| Detailed Analysis | **Business Process Reengineering and Information/Software Engineering** -- Complete business process reengineering activities, as appropriate |
| | **System Analysis and Design** -- Complete comprehensive analyses of functional, data, and support requirements; define and document the technical architecture capable of supporting requirements, risk, and economic analyses; prepare supporting documentation, as needed |
| | **Programming** -- Define and develop prototypes, testbeds, or other mechanisms for requirements determination and proof-of-concept activities |
| | **System Analysis and Design** -- Update risk and economic analyses and AIS support plans |
| | **System Analysis and Design** -- Participate in peer, in-process, or technical reviews, walkthroughs, or other required meetings |
| Development | **System Analysis and Design, and Information Engineering** -- Perform business system and technical design activities, and develop user interfaces |
| | **Programming** -- Complete module construction, acquire Commercial Off The Shelf (COTS) products (as necessary), develop upgrades and extensions to Government Furnished Equipment (GFE) or COTS products, or develop software and other components that cannot be met with GFE or COTS |
| | **System Analysis and Design** -- Develop data conversion plan and system support documentation, to include training |
| | **System Analysis and Design** -- Update risk and economic analyses and AIS support plans; refine the Target AIS Technical Architecture with details of the physical implementation |
| | **Testing** -- Integrate and test the system or subsystem, as appropriate; ensure that the automated information system meets the stated requirements |
| | **System Analysis and Design** -- Participate in peer, in-process, or technical reviews, walkthroughs, or other required meetings |

| *Life Cycle Phase* | *Types of Work* |
|---|---|
| Deployment | **Implementation** -- Implement the system at all operating sites; complete the planned conversion of software and data from the existing system to the new system, if applicable |
| | **Transition to Operations** -- Transition or assist in the transition of all required products to the operations manager |
| | **Customer Training** -- Train customers and technical personnel in the use, operation, and/or maintenance of the system |
| | **System Analysis and Design** -- Update Target AIS Technical Architecture and Concept of Operations documents to reflect "as built" system |
| | **System Analysis and Design** -- Participate in technical reviews, audits, or other required meetings |
| Operations -- Software Maintenance | **System/Software Maintenance** -- Control and respond to requests for engineering changes and modifications; resolve discrepancies and failures of operational systems |
| | **Business Process Reengineering and Information/Software Engineering** -- Redesign existing systems to accommodate changes to process, operating environment, or system interfaces |
| | Any or All Activities Outlined Above -- Provide significantly modified and/or partially new, fully documented systems using the full or (approved) tailored life cycle |
| | **System Analysis and Design** -- Participate in reviews, walkthroughs, or other required meetings |

In addition to system development life cycle support, the chart below summarizes the related support to be provided throughout the entire life cycle.

| *Category* | *Types of Work* |
|---|---|
| Engineering | **Business Process Reengineering** -- Provide business process re-engineering services, to include facilitation of user sessions, development of IDEF activity models, performance of related studies and analyses, and documentation of all efforts |
| | **Information Engineering** -- Provide information engineering services, to include development or enhancement of data, process, and enterprise models and performance of related studies and analyses |
| | **AIS-specific System/Software Engineering** -- Project-specific system/software engineering, architectural, and security support |

| *Category* | *Types of Work* |
|---|---|
| Management | **Product Assurance** -- Support PTO test and integration activities; ensure quality of products and service, to include providing quality assurance and maintaining control processes for all products; respond to issues identified during IV&V; monitor and report performance measurements and software metrics; and provide configuration management and assist the Government in the configuration management of all products |
| | **Project Management** -- Provide program/project planning; plan, manage, and control contractor resources (to include subcontractors); provide administrative support (e.g., technical editing); plan and manage task orders; develop status reports, problem notifications, and responses to inquiries; obtain technical data rights; and recommend engineering and other changes |
| Other Related Services and Products | Perform special studies, provide quick-reaction supplies and services, and provide follow-on support; convert documentation developed under previous life cycle management guidance to current life cycle guidance; provide necessary training related to system development activities or procured software |
| | Identify, acquire, test, and install -- or assist same activities performed by the Government -- necessary system development life cycle software products or applications (e.g., integrated Computer Aided Software Engineering (CASE) tools, database management system, project management tools, code and test generators and analyzers, performance monitoring tools), ensuring enough licenses are provided for multiple, concurrent development efforts (including a site license, as deemed necessary and cost effective); provide incidental hardware, system software, telecommunications, and support resources |

The sections below describe the system design and analysis, programming, testing, implementation, transition to operations, customer training (to include technical personnel), system/software maintenance, business process reengineering, information engineering, project-specific system/software engineering, product assurance, project management, and other related life cycle services to be performed and products to be provided by the SDM Contractors for PTO automated information systems.

Rather than repetitively describing how these activities apply to every system, PTO has classified the systems in Section C.2 into four categories for the purpose of highlighting anticipated variations in SDM contractor support while also streamlining this solicitation:

- *ENTERPRISE*: Systems that provide significant new capabilities, constrained only by interfaces to existing systems. Enterprise systems may be enterprise-wide, mission critical, and/or complex. These systems are developed using the full life cycle process as defined in the LCM-AIS Manual and robust system development methodologies. Some of the systems categorized as Enterprise include Patent Application Management (PAM), Trademark Information System (TIS), and Non-Patent Literature.

- *LEGACY*: Existing systems that are maintained or modified to make corrective, adaptive, or perfective changes (e.g., discrepancy report processing). Some of the systems categorized as Legacy include Classified Search and Image Retrieval (CSIR), Patent

Application Location and Monitoring (PALM), Patent and Trademark Copy Sales (PTCS), and Trademark Application Management (TRAM).

- *OFFICE*: Desktop or LAN-based systems, usually for a single PTO organizational entity, that are characterized as less complex than Enterprise Systems. Office systems are developed using a tailored life cycle process and appropriately scaled development methodologies. Some of the systems categorized as Office include Appeals Case Tracking System (ACTS), Time and Attendance system, and Automated Fee Collection System (AFCS).

- *INFRASTRUCTURE*: Cross-cutting systems and services used by other automated information systems. These systems may be developed either using the full or tailored life cycle, depending upon the complexity of the system or service. The Generalized Image Service is one Infrastructure service; PTO has identified the text search engine portion of automated information system text search functionality as a candidate for an Infrastructure service.

Within each of the sections below, a general description of the work to be performed by the SDM contractors is provided (the Technical Standards and Guidelines provide specific guidance for the processes to be used in performing the tasks and preparing the documents, and the criteria to be used in determining acceptability of task performance/document preparation covered by that life cycle activity). These four categories -- Enterprise, Legacy, Office, and Infrastructure -- are used to highlight anticipated differences in the level of work to be performed or the tools and methodologies to be used.

### C.3.1 System Analysis and Design

As noted in the table above, PTO will require the Contractor to provide system analysis and design staff, tools, and support throughout the system development life cycle. The items to be delivered and the schedule for delivery will be established within the task order(s). The assistance and other items include, but are not limited to, the functions defined below.

#### C.3.1.1 Analysis and Design

To support this task area, the contractor will be required to complete activities such as examine technical, business, and management requirements and/or issues to provide effective solutions for information systems development and maintenance efforts in keeping with PTO standards and PTO strategic and tactical direction; perform technical studies and analyses required throughout the system development life cycle, to include project-specific architectural and security analyses; survey, research, and review information technologies for potential application within the PTO environment, and acquisition by the Contractor or the Government; evaluate commercial off-the-shelf software (COTS) and government off-the-shelf software (GOTS); facilitate requirements sessions and work with programming staff supporting requirements prototype efforts; recommend improvements to existing resources; and use PTO- and industry-standard automated tools throughout the life cycle. Activities may include, but are not limited to, the following considerations: compliance with legal and regulatory guidance, interoperability, open systems environment, security, standards, and data.

### C.3.1.2 Documentation

The PTO will require the Contractor to prepare white papers, surveys, studies, documents, acquisition and system specifications, information brochures, engineering designs, support plans, customer-oriented documentation, and on-line help needed to complete any or all system development life cycle phases; review and recommend additions, revisions, and other changes to the latest versions of documents; refine, revise, or update existing documents; and convert documentation developed under previous life cycle management guidance to that required under the current life cycle guidance. The format and content of these documents will be specified by the PTO at the time of Task Order issuance. The number of copies, instructions for the media and format for electronic copies, and other instructions about these deliverables will be specified in the task order(s).

The following table highlights anticipated distinctions in the System Analysis and Design assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Rigorous use of the PTO system development life cycle; produce all life cycle documentation; use baseline methods defined in the Technical Standards and Guidelines; analysis, design, and documentation accomplished in whole or in part through use of PTO automated tools such as Design IDEF, IEF, PowerBuilder, Forms Designer, RTM, Microsoft Access, and Viewstar; often requires state-of-the-art skills and knowledge in areas such as Standardized Graphic Markup Language (SGML), Electronic Data Interchange (EDI), Optical Character Recognition (OCR), document management, workflow management, and text and image processing and searching |
| Legacy | Use documentation and design developed under previous life cycle as a basis for analysis and design activities -- which may or may not be captured in automated tools; update documentation and design using previous guidelines (Interim Handbook, refer to Section J), or convert documentation into current formats; requires skills in and knowledge of the current PTO environment |
| Office | May use a tailored life cycle management process, as approved by the Chief Information Officer; produce documentation as specified by the approved tailored process, using PTO automated tools (Design IDEF, IEF, PowerBuilder, Forms Designer, RTM, Microsoft Access, Viewstar) whenever practical; requires skills in and knowledge of COTS and LAN products |

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| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Infrastructure | Use current system development life cycle and automated tools, with potential substantial use of previous life cycle information for components spanning Legacy systems; may need to produce tailored documentation and adjust tool usage (as approved by the Chief Information Officer) if conversion of legacy system information is deemed impractical; often requires state-of-the-art skills and knowledge in SGML, EDI, OCR, workflow systems, text databases and search engines, application programming interfaces (APIs), open systems, and advanced architectural concepts and standards |

## C.3.2 Programming

PTO will require the Contractor to provide programming staff, tools, and support. The items to be delivered and the schedule for delivery will be established within the task order(s). The assistance and other items include, but are not limited to, the functions defined below.

### C.3.2.1 Develop Software and Database Products

If COTS or Government-furnished products cannot meet automated information system requirements, the PTO will require the Contractor to develop software and structure the physical database: (1) based on Government-approved specifications; (2) using industry-standard systems/software engineering techniques; and (3) following product assurance disciplines. The Contractor shall use ICASE automated tools, when practical, to generate the software or structure the database. If manual development is required, the contractor shall use modern software development concepts, tools, and techniques. As defects are identified by the contractor or the Government during the Development phase or during testing activities, the contractor shall correct the defects. The Contractor support includes:

(a) Source and Executable Programs

(1) Paper listings and electronic versions of all source code

(2) Electronic versions of all executable object code

(b) Other Programs

(1) Electronic versions of source and resulting object code generated by individual compilers, linkers, editors, translators, and other programs used to produce executable code

(2) Documentation and, if necessary, source code for all utility software (such as ICASE or programmer's workbenches) used to produce executable code

### C.3.2.2 Requirements Prototyping and Proof-of-Concept Testbeds

The PTO will require the contractor develop and test prototype programs and databases, and proof-of-concept testbeds, to determine optimal solutions for concepts and problems, resulting in the development or modification of requirements. The contractor may also be called upon to develop schedules, to include parallel operations where required, identify the proposed prototyping or proof-of-concept technical approach, and describe anticipated results. This function involves all the activities needed to satisfy the prototype or proof-of-concept objectives, to include providing COTS software, hardware, and communications, if required.

### C.3.2.3 Upgrade and Tailor COTS and Government-Furnished Products

The PTO will require the contractor to identify, acquire, test, deliver, and install Commercial Off The Shelf (COTS) products (as necessary); and to develop and test upgrades and extensions to Government-furnished or COTS products. PTO will require the Contractor to develop upgrades and extensions: (1) based on Government-approved specifications; (2) using system/software engineering tools and techniques in accordance with PTO Technical Standards and Guidelines, or other industry-standard tools and techniques approved by PTO; and (3) following product assurance disciplines. The Contractor shall use ICASE automated tools, when practical, to generate the software or structure the database. If manual development is required, the contractor shall use modern software development concepts, tools, and techniques. As defects are identified by the contractor or the Government during the Development phase or during testing activities, the contractor shall correct the defects. For developed software (e.g., upgrades, extensions, macros, front-ends), the Contractor support includes:

(a) Paper listings of all source code

(b) Electronic versions of source and resulting object code generated by individual compilers, linkers, editors, translators, and other programs used to produce executable code

(c) Documentation to be used to produce executable code

The following table highlights anticipated distinctions in the Programming assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Use of SQL compliant relational database management systems; use of C, Visual Basic, Visual C++, and other high-order programming languages; code generated using IEF, ICASE toolset, PowerBuilder, Forms Designer, Viewstar, or other automated tools wherever practical |

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Legacy | Use of COBOL, Algol, PL/1, PASCAL, C, and Assembler; may require manually developed code; current database management systems in use include ADABAS, DMSII, Informix, Oracle, and Sybase |
| Office | Use of COTS, potentially augmented with C, Visual Basic, Visual C++, and other high-order programming language front-ends; development activity replicates the PTO desktop systems and network operating environment; current database management systems in use include Paradox and Microsoft Access |
| Infrastructure | Use of any or all languages and APIs to interface with Legacy, Enterprise, and Office systems |

### C.3.3 Test and Evaluation

The PTO will require the Contractor to test and evaluate Government-furnished, COTS, and developed products to verify compliance of the potential module, subsystem, or system with key specifications and functionality prior to delivery to the PTO. Tests may be used only during the project development phase, or may be used as benchmarks for functional and performance comparison of subsequent modifications. The items to be delivered and the schedule for delivery will be established within the task order(s). The following describes typical functions associated with Test and Evaluation.

#### C.3.3.1 Define Objectives and Methodology

This entails defining the objectives, establishing priorities, and developing the functional and technical/performance test methodology. The methodology includes, but is not limited to, the following: functional descriptions and requirements; service level objectives; current workload; operational environment under which the module, subsystem, or system will run; communications protocols; interfaces to external, non-agency systems; standards used for development and operation; and a description of the data needed for benchmark development.

#### C.3.3.2 Collect/Develop Data

The PTO will require the contractor collect or develop technical/performance and workload data, using any preliminary work completed by PTO or PTO's contractors wherever possible. If normalization of the data is required, it will be completed by the contractor.

#### C.3.3.3 Develop Test Plan

The PTO will require the contractor prepare a plan that details the methods and procedures that will be used to execute the tests. The plan addresses requirements, specifies files to be used in developing the tests, describes the data structure analysis techniques to be used, specifies test

details (e.g., memory utilization, instruction mix, multiple processing thresholds), and specifies scripts to be used.

### C.3.3.4 Design and Develop Test Program(s)

The PTO will require the contractor design and develop functional and technical/performance test software, data, and test scripts. The contractor shall provide the software and data on magnetic media, and program listings on paper.

### C.3.3.5 Conduct Tests

PTO plans to provide a system testbed located in or near Arlington, Virginia for use by the SDM contractors. The PTO will require the contractor conduct the unit and integration tests in accordance with the approved Test Plan, and record the results of the tests. Testing shall validate the programs and data for errors, and confirm the reasonableness of performance requirements.

PTO will require the SDM contractors to allow PTO employees, or employees of other organizations such as PTO's current IV&V and SETA contractors, to witness testing and to examine exhibits of work in progress including, but not limited to, 1) source code files, 2) diagnostic output, and 3) output of test and software metrics tools.

The Contractor shall resolve concerns identified during PTO review of test activities and test results, and shall make all necessary revisions to the design and code, perform all necessary retesting, and update the system development files. At completion of testing, the contractor shall provide written verification that the tests provide an accurate representation of PTO functional and technical/performance requirements, and that all delivered components can be integrated with other PTO systems, infrastructure, and operations. At PTO's option, the contractor will provide test scripts, test data, test case suites, test procedures, specifications, and other testing material in electronic form for capture within PTO's configuration management system.

The following table highlights anticipated distinctions to be made for Test and Evaluation to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Rigorous functional and technical/performance testing using testbed |
| Legacy | Functional testing using testbed |
| Office | Functional testing using development replica of desktop and network systems; tailored testing may be approved by the Chief Information Officer |
| Infrastructure | Rigorous functional and technical/performance testing using testbed |

### C.3.4 Implementation

The PTO will require the Contractor to assist in the implementation of GFE, COTS, and developed products in accordance with a pre-approved plan. The items to be delivered and the schedule for delivery will be established within the task order(s). The following describes typical functions associated with Implementation.

#### C.3.4.1 Set-Up Implementation

PTO may require the contractor to ensure that manuals have been distributed, supplies are in place, sites are ready, computer resources are available, personnel have been trained to support the implementation, or other activities required prior to initiation of implementation activities. The contractor may be required to unpack products; check to ensure that delivered product items match orders, invoices, bills of lading, and/or configuration item lists; label product items in accordance with established configuration management guidelines; obtain missing items and resolve discrepancies; maintain an inventory of delivered items; or provide other pre-implementation support as required. PTO also will require the contractor to participate in pre-implementation reviews to ensure everything is in place prior to beginning implementation.

#### C.3.4.2 Execute Plans

After approval, the contractor shall carry out the activities of the Production Installation Plan and Operations and Maintenance Plan, in coordination with PTO. Activities may include, but not be limited to, the following: complete the planned conversion of software and data from the existing AIS to the new AIS, if applicable; schedule and coordinate installation of products; transport products to end-user and other sites at the PTO; assemble and install hardware products; load and tailor software products; load data; and check the installation area to ensure everything is running. The contractor shall carry out implementation activities to minimize interference with normal PTO activities; this will typically require activities to take place after PTO business hours. Following completion of implementation activities, the PTO will require the contractor participate in a post-installation review.

The following table highlights anticipated distinctions in the Implementation assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Substantive pre- and post- implementation activities may be required |
| Legacy | May require substantive software and data conversion |

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Office | Substantive pre-implementation activities may be required to ensure desktop and LAN configurations can accept implementation; may require implementation during business hours to ensure personnel understand all aspects of system (informal, at-the-desk training) |
| Infrastructure | Substantive pre- and post- implementation activities may be required; for Infrastructure systems involving Legacy systems, may require substantive software and data conversion |

### C.3.5 Transition to Operations

Transition to Operations encompasses those functional and operational activities required for the successful transition of information systems and databases from the Deployment life cycle phase to Operations life cycle phase. The items to be delivered and the schedule for delivery will be established within the task order(s). As tasked, the PTO will require the Contractor to prepare plans (such as a Transition Plan and Operations and Maintenance Plan), methodologies, and other documents, and to advise and assist the PTO in managing the transition from current to future PTO procedures and systems. Items to consider during the transition include business processes and procedures, work in progress (e.g., patent or trademark applications in the pipeline), staff, information systems and databases (to include conversion of software and data), parallel operations, modification of PTO facilities, and completion of activities required to officially turn over the installed system to Operations and Maintenance personnel. The following describes typical functions associated with Transition.

#### C.3.5.1 Define Objectives

This entails defining the objectives and establishing priorities for the Transition Strategy.

#### C.3.5.2 Perform Transition Analysis of the Interim and Target Solutions

This involves analyzing and recording the changes in the operational business and technical environments when the transition from the current operations to the envisioned TO-BE processes will occur. Given the identified interim and target processes and architectures, the PTO may require the contractor to identify and analyze perceived difficulties in achieving the transition. Tasks include:

- Analyze and document functional, technical, and procedural changes
- Analyze and document facility and service changes
- Analyze and document changes to the organizational and management structure
- Analyze and document staffing changes
- Analyze and document training changes
- Analyze and document the impact of transition on existing human resources
- Analyze and document resistance to change by key managers and by the work force
- Identify any uncertainty in the transition analysis

- Analyze and document the risk associated with the transition
- Identify the standards for compliance to include a description of services for managing, formatting, and exchanging data
- Interview relevant personnel
- Assess change impact on business and technical process, people, culture, support, systems, technology, organization structure, labor issues, and facilities
- Identify management actions and decisions for transition

### C.3.5.3 Develop Transition Strategy

In this area, personnel will analyze the current support requirements and capabilities in relation to existing technology and technical trends. Using the resultant information, the contractor may be called upon to develop strategies for the transition of support from the current base to a new structure that meets guidelines.

### C.3.5.4 Define Level of Support

This entails the identification of the level of support for the functional area or activity either being supported or for which support is contemplated. The contractor may be called upon to assist in the recurring steps to define, evaluate, and implement the incremental improvements needed to achieve simplified and streamlined operation of the functional and technical operational activity.

### C.3.5.5 Plan Transition

This task area entails development of a proposed time-phased conversion and transition plans that define what changes will be made, when they will be made, how they will be implemented, and how they will be maintained once implemented. The transition plan shall address integration and migration issues relating to implementing new business processes, creating new systems, applying new technologies, aligning personnel and culture, and identifying new organizational structure and facilities requirements. The plan also addresses locations, organizations, and related issues, as well as new performance targets for each proposed change.

The PTO will require the contractor to develop plans for making a transition from the AS-IS process to the TO-BE process, minimizing disruptions to operations and services. The scope of transition planning shall include the measurement and analysis of the performance gap between the AS-IS activity model/process maps/change characteristics and TO-BE activity model/process maps/change characteristics, developing business or technical projects focused on reduction or elimination of the gap. Tasks include:

- Identify optimum sequence for implementation of TO-BE processes
- Identify personnel, training requirements, schedules and other critical success factors for training to facilitate the proposed transition
- Identify steps required to make transition, including roles, activities, schedule and responsibilities
- Identify risks associated with the proposed transition plan

- Develop reporting requirements appropriate to the TO-BE process which will facilitate the identification of costs of current processes
- Create a Business Process Reengineering Project Opportunity Matrix to identify the business implementation plans with the highest improvement opportunity and highest probability for successful implementation
- Develop recommended business implementation projects and comprehensive transition plan

### C.3.5.6 Execute Plans

The PTO will require the contractor advise and assist the PTO in managing the transition from current to future PTO procedures and systems, in accordance with the approved Business Transition Plan and Operations and Maintenance Plan. Contractor assistance includes conducting or participating in Government conducted post-transition reviews; monitoring the progress of execution through observation, interviews, and other appropriate techniques; and evaluating and documenting the success of the transition plan in transforming the business and technical environments to the interim and target solutions.

The following table highlights anticipated distinctions in the Transition assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Transition spans multiple organizations, processes, and systems; business, management, and personnel aspects of transition most likely are more critical than technical aspects |
| Legacy | Although Legacy systems are in operation, modifications or enhancements to these systems may require transition activities |
| Office | Transition usually applies to one system and one process, but may span multiple organizations |
| Infrastructure | Transition may span multiple organizations, processes, and systems; technical aspect is most critical |

## C.3.6 Customer Training

The PTO will require the Contractor to develop, conduct, and administer training programs at all levels. The items to be delivered and the schedule for delivery will be established within the task order(s). As tasked, the contractor will be called upon to provide training sessions, conduct training, arrange or coordinate training sessions from other vendors or organizations, develop and provide training materials as required, and ensure that all developed software contains user training and help modules.

Training may take many forms to include: (1) general orientation, (2) tutorials, videotape, on-line help, or other programmed instruction, and (3) in-depth training. The kind and degree of training will depend

on the category of personnel to be trained (e.g., executives, supervisors, professionals, clerks, administrative personnel, operators, facility trainers, system and network managers) and on particular training objectives which will be identified in individual task orders. For example, information technology personnel training may include management and technical training on subject areas such as the life cycle management processes, methodologies, tools used during development or maintenance activities, etc.

As another example, the contractor will be required to provide training in business process reengineering methodology and tools. The following list describes the training modules and courses that shall be available through the Contractor.

- Introduction to Business Process Reengineering Concepts
- Introduction to IDEF0 - process modeling
- Introduction to Process Mapping
- Introduction to Operations Research/Industrial Engineering/Work Measurement/Management Science
- Team Building
- Effective Project Management
- Facilitation Skills
- Costing/Economic Analysis/Activity Based Costing (ABC)
- Simulation and Model Building
- Introduction to Information Engineering/Activity & Entity Analysis/Data Management
- Best Practices (Research) and Benchmarking (Metric Driven Studies)
- Visioning/Breakthrough Thinking
- Change Management and Organizational Assessment: Customer and Stakeholder Analysis; Culture, Issues, Beliefs, Norms; Change Readiness; Techniques for Managing Change
- Advanced Business Process Reengineering
- Computer Tools for IDEF0

The Contractor may be called upon to develop training documentation and provide training both on-site (at Government facilities) and off-site (at Contractor furnished facilities).

The following table highlights anticipated distinctions in the Customer Training assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Primarily functional; because of the extent of the system, most likely includes numerous training forms (e.g., computer-based, classroom, tutorials, COTS) and categories of personnel (e.g., senior managers, clerical staff, examiners or attorneys, support personnel) to be trained |
| Legacy | Functional and technical; refresher training and short-duration update training will most likely be required |

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Office | Most likely COTS or other provider training, with some augmentation for PTO-specific adjustments |
| Infrastructure | Primarily technical |

### C.3.7 System/Software Maintenance

Maintenance is defined as the restoration of an AIS to an operational status or the correction of problems to permit an approved AIS to run or to meet the design specifications. Modification is defined as a change to the design specifications of an AIS (e.g., a change in input, program logic, or output). PTO will require the contractor maintain and modify AISs in accordance with life cycle guidance and industry standard practices. The items to be delivered and the schedule for delivery will be established within the task order(s). The contractor shall adhere to the procedures for identifying, approving, and responding to Discrepancy/Incident Reports and Modification Requests (contained in Section J). The following describes typical functions associated with System/Software Maintenance.

#### C.3.7.1 Identify and Report Problems or Changes

The PTO will identify, or will require the Contractor to proactively identify for PTO approval, discrepancies and failures of operational systems; analyze the problem to determine the potential cause; determine the impact; and report the results of the analysis. If the analysis requires redesign of existing Legacy systems to accommodate changes to process, operating environment, or system interfaces, PTO will initiate business process reengineering activities to determine the required changes. PTO will designate that substantive changes and redesign comprise a new system (Enterprise, Office, or Infrastructure); however, maintenance and modification of the existing system is still expected while the new system completes the life cycle.

#### C.3.7.2 Revise Existing System

The PTO will require the Contractor to track and respond to Discrepancy/Incident Reports, Modification Requests, and engineering change requests. As tasked, the Contractor will design, develop, and test modified and/or partially new, fully documented systems in response to PTO-prioritized reports and requests. Depending upon the extent of the changes required, the PTO will require the Contractor to adhere to the full current system life cycle or tailored current system life cycle (as approved by the Chief Information Officer). The PTO will require the Contractor to perform software maintenance and modification in a non-production environment, and transition modifications into the production system after PTO test and approval activities. The Contractor shall ensure that modification activities are coordinated with software maintenance activities (discrepancy fixes) to eliminate duplicative efforts.

### C.3.7.3 Conduct Preventative Maintenance

The PTO will require the Contractor to provide preventative maintenance and repairs needed to ensure the performance of software and incidental and other resources that the Contractor delivers.

The following table highlights anticipated distinctions in the System Software Maintenance assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | None |
| Legacy | None |
| Office | None |
| Infrastructure | None |

## C.3.8 Business Process Reengineering

The implementation of radically different business processes presents significant challenges in areas as diverse as project planning, assessing change readiness, planning effective communications, team management, human resources, labor management relations, client training, space management, integration and migration strategy development, and technical management (e.g., implementation) planning. The Contractor will provide expert services to meet these needs and assist the PTO in the provision of the full breadth of Business Process Reengineering (BPR), Business Process Engineering (BPE), and Business Process Improvement (BPI) services to its customers.

Since BPR is an integral part of the entire PTO system development life cycle, BPR activities must be closely coordinated with information engineering and system analysis and design activities. For this solicitation, the distinction between BPR and information engineering is that BPR addresses the development of new or TO-BE business processes; information engineering addresses the activities required to design and develop the specific automation solution supporting the reengineered business process.

BPR support includes facilitation;[3] activity, data, and simulation modelling; transaction flow analysis; internal control and risk analysis; activity-based costing; economic analysis; and development of performance measurement techniques. Since BPR results "feed into" system development and

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[3] Facilitation includes visioning, communicating, developing "break through" thinking, and other activities involved with group interaction and dynamics. Facilitation may involve the use of specialized software tools (e.g., groupware, decision-support) designed to enhance creative problem solving and to document and reach decisions. Facilitation support includes facilitators who motivate and guide the participants; scribes who record the deliberations, conclusions and recommendations of the participants; and tool operators familiar with the use of modeling and other software tools used during the analysis/documentation process.

information engineering activities, the Contractor shall ensure BPR results and tool output support PTO standard notations and methodologies (e.g., IDEF0 notation, James Martin Information Engineering methodology and programmatic notation, ICASE tools). Further, the contractor shall support the porting of models between BPR and ICASE tools wherever possible. The contractor will document all such efforts as called for in each Task Order. The items to be delivered and the schedule for delivery will be established within the task order(s). The following describes typical functions associated with BPR.

### C.3.8.1 Define Enterprise Strategy

The PTO will require the Contractor apply an enterprise-wide set of disciplines for the planning, analysis, design, and construction of business systems on an enterprise-wide basis or across a major sector of the enterprise. The PTO also will require the Contractor to perform and document enterprise-wide strategic systems planning, business information planning, and business analysis using PTO and other required automated tools. Activities include, but are not limited to, the following:

(a) Review existing documentation and extract necessary information

(b) Document current organization and executive management, functions, data subject areas, and entity-relationships

(c) Analyze the enterprise mission, vision, and goals for the future against known problems and technology solutions

(d) Analyze prioritized objectives and critical success factors, to include decisions, assumptions, and other related information

(e) Perform cluster analysis of functions and business areas to identify prioritized recommendations

(f) Document results within automated tools, generating an Information Strategy Plan

### C.3.8.2 Model Current Business Practices

These efforts involve documenting and analyzing the differences in the way common functional processes are executed, benchmarking[4] these processes against the best public and private sector achievements, identifying the existing AS-IS processes and data, documenting known problems in existing processes and data that must be corrected to provide a functionally adequate standard, and recommending data processes and data baseline that together meet the process and associated information needs of the functional activity.

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[4] Benchmarking plans and measures products, services, and practices against world class organizations or industry leaders.

The PTO will require the Contractor identify and analyze current processes, data flows, their value added, and the resources and systems used in the existing business environment; extract the underlying business rules (explicit or implicit) which govern the enterprise's operations; develop an understanding of the objectives accomplished by the processes; review existing documentation; conduct interviews with customers and other personnel; ensure the accuracy of information collected and supporting documentation; and use automated tools to develop IDEF0 activity models and process maps, and simulation models. Economic costs and value-added reviews associated with the as-is process will be collected and analyzed. Design IDEF is PTO's activity modelling tool.

PTO also will require benchmarking support that includes conducting research to identify world class companies/organizations and their best practices with respect to the process being engineered, reengineered, or redesigned; arranging for benchmarking site visits; planning and structuring the benchmarking method; electronically cataloging information gained from benchmarking and best practices; and assisting the project team with the integration and application of best practices information.

Other tasks include:

- Develop activity models and process maps of the AS-IS process
- Develop AS-IS data models
- Identify future workloads and other variables affecting as-is process
- Develop cost data associated with AS-IS processes leading to definable product and/or service costs, activity-based costs, and economic costs
- Develop value-added analyses
- Develop an Economic Analysis of the AS-IS environment
- Describe facilities and services
- Identify constraints limiting operations
- Describe organizational structure, management responsibilities, and organization culture
- Develop staffing profiles and skills matrices
- Describe training programs
- Document uncertainties in the descriptions of the current operations.

### C.3.8.3 Develop Reengineering Strategies

The PTO will require the Contractor identify functions and outcomes, and relate these to the enterprise mission, goals, and objectives; and derive approaches to re-inventing the business processes and rules such that equivalent outcomes are produced at a savings.

### C.3.8.4 Model New Business Processes

The PTO will require the Contractor identify future TO-BE processes and data; and document strengths, weaknesses, costs, and operational requirements. The PTO will require the contractor to document: TO-BE business process alternatives, capitalizing on the information obtained from the AS-IS process documentation; team ideas and output; the application of expert systems, decision support systems, and other automated processing techniques; alternative work

processes; cost reductions; cutting cycle times; productivity increases; customer satisfaction gains; revenue increases; market share increases; and other potentially desirable modifications to the AS-IS process. The PTO also will require the contractor develop an Economic Analysis, including cost and risk estimates, for the most feasible alternatives approved by the PTO.

PTO also will require benchmarking support that includes conducting research to identify world class companies/organizations and their best practices with respect to the process being engineered, reengineered, or redesigned; arranging for benchmarking site visits; planning and structuring the benchmarking method; electronically cataloging information gained from benchmarking and best practices; and assisting the project team with the integration and application of best practices information.

Other tasks include:

- Develop activity models and process maps of TO-BE (e.g., Target Design) alternative processes, and identify advantages and disadvantages associated with alternatives
- Develop workload projections for the TO-BE alternatives
- Develop TO-BE data models
- Develop models simulating the TO-BE environment
- Develop a Concept of Operations
- Develop an Economic Analysis of approved feasible alternatives to support recommendation of TO-BE processes
- Describe planned facilities and services
- Identify and list constraints limiting operations and risks associated with TO-BE process
- Describe planned organizational structure and management responsibilities
- List planned staffing profile and skills requirements
- Estimate organizational impact and recommend options for minimizing work disruption
- Identify required training programs
- Document any uncertainties in the descriptions of the planned operations

### C.3.8.5 Plan Transition

The PTO will require the Contractor develop plans for implementing the reengineered process and for transitioning from the AS-IS to the TO-BE process. The PTO will require the Contractor support execution of the transition plan. Section C.3.5 of this solicitation contains further details pertaining to Transition activities.

### C.3.8.6 Evaluate and Execute Further Improvements

The PTO will require the Contractor define and institute metrics which assess how well the new processes are working. The PTO also will require the Contractor define, institute, and execute methods which will improve the processes or supporting systems; identify shortfalls in process performance; and recommend solutions for Government approval. Tasks include:

- Conduct improvement project evaluations
- Develop process performance evaluations

- Conduct and document performance gap assessments
- Develop a new enterprise strategy impact assessment
- Recommend new and/or corrective actions for continuous process improvement

The following table highlights anticipated distinctions in the BPR support to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | None |
| Legacy | None |
| Office | None |
| Infrastructure | None |

### C.3.9 Information Engineering

The contractor will perform or provide support to the performance of any or all stages of information engineering. Since BPR is an integral part of the entire system development life cycle, information engineering activities must be closely coordinated with BPR and system analysis and design activities. For this solicitation, the distinction between BPR and information engineering is that BPR addresses the development of new or TO-BE business processes; information engineering addresses the activities required to design and develop the specific automation solution supporting the reengineered business process.

Like BPR, information engineering support includes facilitation; activity, data, and simulation modelling; transaction flow analysis; internal control and risk analysis; activity-based costing; functional economic analysis; and development of performance measurement techniques. Since information engineering uses information generated through BPR activities, the Contractor shall ensure information engineering results and tool output support PTO standard notations and methodologies (e.g., IDEF0 notation, James Martin Information Engineering methodology and programmatic notation, ICASE tools). Further, the contractor shall support the porting of models between BPR and ICASE tools wherever possible. The contractor will document all such efforts as called for in each Task Order. The items to be delivered and the schedule for delivery will be established within the task order(s). The following describes typical functions associated with Information Engineering.

#### C.3.9.1 Perform or Assist Business Process Reengineering Activities

The PTO will require the Contractor perform or assist with all BPR activities comprising section C.3.8 of this solicitation. This includes the development or enhancement of data, process, and enterprise models for use in designing and building integrated, shared software and database management systems.

### C.3.9.2 Perform or Assist AIS Development

The PTO will require the Contractor apply reverse engineering and software reengineering disciplines to develop technical transition strategic and planning documents. The PTO also will require the Contractor to deliver logical and physical data models and associated data elements and subject area data bases.

The following table highlights anticipated distinctions in the Information Engineering assistance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Use James Martin's information engineering methodology and the Information Engineering Facility (IEF) Integrated CASE tool developed by Texas Instruments, or Powerbuilder during the development phase, as appropriate and as approved by the Chief Information Officer |
| Legacy | Use of information engineering may be considered impractical for extensions to existing systems |
| Office | Extent of use of information engineering may be tailored, as approved by the Chief Information Officer (e.g., data and process models may be created using information engineering, while code construction and implementation uses other methods -- depending on the capabilities of the COTS desktop- or LAN-based products being integrated or deployed) |
| Infrastructure | Concentration on interfaces between systems, which may include information in many formats and media |

### C.3.10 Project-specific Software/System Engineering

The PTO will require the Contractor perform project-specific system/software engineering, metrics reporting, and architectural and security-related analyses. The items to be delivered and the schedule for delivery will be established within the task order(s). The assistance and other items include, but are not limited to, the following:

(a) Capacity planning and performance evaluation

(b) Simulation and modeling

(c) Assess risks, recommend risk mitigation activities, and track progress and report on risk reduction

(d) Failure Mode, Effect, and Criticality Analysis (FMECA), and other software engineering activities outlined in MIL-STD 497 or in IEEE guidance

(e) Human factors support (i.e., ergonomics and related subject areas)

(f) Provide technical guidance in software engineering techniques and automated support tools

The following table highlights anticipated distinctions in the Project-Specific Software/System Engineering to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Rigorous use of software engineering practices |
| Legacy | Identification of required changes (e.g., additional metric collection and reporting, critical risk areas) based upon software engineering practices; upon approval, revision of systems using software engineering practices (as practical) |
| Office | Use of software engineering practices depends upon the COTS or LAN product itself and user requirements; anticipate use of rigorous software engineering practices for product interfaces, necessary augmentation of products (e.g., front ends, back ends), and functions not supported by the product (e.g., data collection and loading) |
| Infrastructure | Rigorous use of software engineering practices |

### C.3.11 Product Assurance

Product assurance support will be needed throughout the system development and maintenance life cycle. The PTO will require the Contractor to provide the staff and/or tools to perform or support PTO's performance of: responding to PTO test and evaluation results, quality assurance, configuration management, responding to IV&V results, and library maintenance. The items to be delivered and the schedule for delivery will be established within the task order(s). The assistance and other items include, but are not limited to, the functions defined below.

#### C.3.11.1 Respond to PTO Test and Evaluation Results

After contractor test and integration is complete, the PTO will require the Contractor to respond to concerns identified during PTO test and evaluation of upgrades and extensions, COTS products, developed modules/subsystems/systems, and other contract deliverables. "Respond to" includes fixing unsatisfactory work products and resubmitting products for PTO approval. The assistance and other items include, but are not limited to:

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(a) Resolve concerns identified during PTO developmental test and integration activities, including unit tests and subsystem/system integration tests

(b) Resolve concerns identified during PTO implementation test and integration activities, including acceptance tests and production installation tests

(c) Resolve concerns identified during PTO operational test and integration activities, including operational acceptance tests and baseline acceptance tests

### C.3.11.2 Quality Assurance

The PTO will require the Contractor to establish and maintain an effective quality assurance program to ensure the technical quality of all products and services provided under any task order. This will include, but not be limited to, software quality monitoring, methods to identify and correct quality deficiencies in products and services, and methods for continuous improvement. Quality Assurance activities include development of quality assurance plans and procedures; collection and reporting, on a periodic basis, of metrics specified within the Metrics Technical Standard and Guideline (refer to Section J) and other, defined project-specific metrics; conduct of Contractor reviews; participation in any PTO-conducted reviews, walkthroughs, or other required meetings held throughout the system development life cycle; and development of responses to the results of any PTO quality assurance activity.

The Contractor shall ensure complementary interface between Contractor quality assurance methods and tools and PTO's quality assurance methods, tools, and environment. PTO currently uses SQL Software's Product Configuration Management System (PCMS) and IBM's INFOMAN to support configuration management, and an IV&V contractor for quality assurance functions. PTO may require the SDM contractors to use tools specified by the PTO.

### C.3.11.3 Configuration Management

The PTO will require the Contractor to deliver documents and staff to assist the PTO with the management of the PTO system (hardware, software, and documentation) configuration, and will also require the contractor to manage all configuration items under their control. The PTO is currently using Gec. Marconi's Requirements Traceability Management (RTM), PCMS, and INFOMAN software to support configuration management. Assistance and other items include, but are not limited to, the following:

(a) Develop configuration management plans and subcontractor control reports

(b) Identify configuration items

(c) Monitor and report Configuration Changes and Discrepancy Reports

(d) Provide Configuration Status Accounting Reports

(e) Use configuration management automated tools

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(f) Participate in functional, physical, and other configuration audits

### C.3.11.4 Respond to Independent Validation and Verification (IV&V) Results

The PTO will require the Contractor to respond to and resolve concerns identified during PTO's IV&V of deliverables throughout the system development life cycle.

### C.3.11.5 Documentation Library

The PTO will require the Contractor to update the PTO library containing all PTO documents prepared or collected by the Contractor. The library will include: PTO system development life cycle documentation; source code, schematics, and other data generated during all PTO life cycle phases; and indices to all documents and data. Items within the library include, but are not limited to, the following.

(a) Paper and electronic copies of relevant documents, data, and information
  (1) Prepared by the PTO
  (2) Prepared by the Contractor
  (3) Provided to the Contractor by others

(b) Indexes to Documents, Data, and Information
  (1) Abstracts of all documents and data, with keywords for indexing
  (2) Indexes to all documents and data
  (3) Database(s) to track comments received and all changes made to PTO documents and data

The following table highlights anticipated distinctions in the Product Assurance to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | Full testing, quality assurance, and configuration management using PTO tools such as RTM and PCMS |
| Legacy | Full testing, quality assurance, and configuration management; all Legacy Systems may not be transitioned to PTO tools such as RTM and PCMS at contract award; PTO will provide Legacy System testing, quality assurance, and configuration management tools as GFE to the SDM contractors to the maximum extent practical |
| Office | May be tailored in accordance with Chief Information Officer approval of tailored life cycle; may require the use of PTO tools such as RTM and PCMS |

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Infrastructure | Full testing, quality assurance, and configuration management using PTO tools such as RTM and PCMS |

### C.3.12 Program and Project Management

The PTO will require the Contractor to provide project and contract management of deliverables and services, using PTO automated tools such as Microsoft Project or Robins-Gioia's Control and Analysis Tool (CAT) as required. The items to be delivered and the schedule for delivery will be established within the task order(s). The procedures for performing these management tasks are described in the PTO Project Management Manual and include, but are not limited to, the following functions.

#### C.3.12.1 Management Planning

The PTO will require the Contractor to prepare and deliver management plans at Contract and Task order initiation, negotiate and execute task orders, provide support and data needed for refinement of those plans, and notify PTO of changes and problems. The plans include, but are not limited to, the following.

(a) The Contractor will prepare, maintain, and execute a Program Management Plan to ensure timely and cost-effective accomplishment of work under this contract and early identification and correction of problems and issues. This plan will describe organization, resources, and management policies and procedures, including subcontractor and Government-provided property management, that the contractor shall employ to meet the cost, performance, and schedule requirements throughout the period of performance.

(b) The Contractor will prepare and execute a Transition Plan to ensure an orderly phase-in of services and support currently provided to PTO under the incumbent contract and other contracts. This plan will identify the Contractor's Transition Manager and will address how the Contractor shall assume responsibility for services and support. The plan will include facilities implementation, staff training and deployment, and other activities the Contractor deems necessary for successful transition. Throughout transition, the Contractor will prepare a chronology or other appropriate record of lessons learned from transition activities.

(c) As part of the program planning effort, the Contractor will prepare, maintain, and execute a Contract Risk Management Plan describing risk areas and mitigation activities associated with performance of the collective set of task orders. This plan may be incorporated within the Program Management Plan or may stand alone.

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### C.3.12.2 Contract or Task Management

Efforts in this area entail the daily activities required for successful program and project completion. The Contractor shall direct, manage, and administer the accomplishment of all task orders. The Contractor shall be responsible for all Contractor, subcontractor, or vendor personnel and performance, and shall ensure that staff technical proficiency and professional capability are maintained. The Contractor shall deliver periodic and ad hoc, oral, and written, reports summarizing the status of work being performed. The Contractor also shall ensure a complementary interface between Contractor and PTO project management tools and activities (PTO currently uses Control and Analysis Tool (CAT) and Microsoft Project for project management). The items and assistance include, but are not limited to:

(a) Bi-weekly meetings on status of each Task Order

(b) Monthly written and oral status reports

(c) Periodic Program Management Review (PMR) meetings

(d) RESERVED

(e) Ad hoc written and oral briefings

The Contractor shall deliver oral and written notice of all problems that impact or potentially impact the contract, deliverables, and/or schedule to the Contracting Officer. This includes:

(f) Immediate verbal notice of technical problems

(g) Immediate verbal notice of potential cost overruns and schedule delays

(h) Immediate verbal notice when 75 percent of the funds allocated have been used on individual task orders and on the entire contract

(i) Written notices within 24 hours of verbal notices

### C.3.12.3 Regulatory Compliance

The PTO will require the Contractor to deliver written and oral responses to assist the PTO in responding to inquiries, questions, reviews, inspections, audits, and/or investigations being conducted by oversight organizations such as the Department of Commerce, General Services Administration, General Accounting Office, Office of Management and Budget, U.S. Congress, and U.S. and international patent organizations.

### C.3.12.4 Technical Data Rights

The PTO will require the Contractor to deliver source code and supporting manuals for all developed or modified PTO automated information systems. The PTO will own all technical

data rights to all documents, software, and other material the Contractor develops under this contract, in accordance with the provisions stated in Section H.7 and Section I.1 of this solicitation.

### C.3.12.5 Engineering and Other Changes

The PTO will require the Contractor to deliver proposals for changes to the PTO system and/or contract. The items and assistance include, but are not limited to:

(a) Proposals for engineering and other changes

(b) Proposals for software process improvements

### C.3.12.6 Centralized Program Support

The PTO will require the Contractor to provide general support for the program or for assigned tasks. This encompasses procurement, program management, financial management, contract and subcontract management, administrative, clerical, technical editing, document preparation, and related functions.

The following table highlights anticipated distinctions in the Program and Project Management support to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | None |
| Legacy | None |
| Office | None |
| Infrastructure | None |

## C.3.13 Other Related System Development and Maintenance Life Cycle Products and Services

The PTO will require the Contractor to provide other, related system development and maintenance life cycle products and services. The items to be delivered and the schedule for delivery will be established within the task order(s). Support includes, but is not limited to, the following functions.

### C.3.13.1 Acquisition of Resources

Normally, all acquisition activities will be performed by the PTO. However, if determined to be in the best interest of the Government, PTO will require the Contractor to identify, acquire, test, deliver, and install the incidental (special, one-time, or low-cost) hardware, software, telecommunications, and support resources needed for the development and maintenance of PTO AISs that cannot be provided through existing PTO or Contractor sources. Categories and

examples of the incidental resources that the Contractor may be required to provide are listed below:

(a) Hardware, such as a personal computer dedicated exclusively to this contract

(b) Software tools or applications, such as Integrated Computer Aided Software Engineering (ICASE) tools, database management system (DBMS), project management, code and test generators and analyzers, performance monitoring tools, or other software needed exclusively for this contract

(c) Multiple licenses or a site license may be procured to support concurrent software development and maintenance efforts, as deemed necessary and cost effective.

(d) Telecommunications, such as modems needed exclusively for this contract

(e) Support, such as courier services required for the daily delivery of mail. The PTO discourages the use, however, of special courier services for the delivery of late documents. Special courier services must be approved by the COTR or Contracting Officer prior to use.

Please note that the Government will not pay for general office equipment (e.g., personal computer and related office automation software) that is necessary to perform SDM contractor or subcontractor business functions. The only time the Government will consider paying for personal computers and/or software is when it is directly related to a specific development application.

The contractor shall provide justification for all personal computer and/or software purchases that are to be directly charged to the contract; only the Contracting Officer can approve such a purchase.

### C.3.13.2 Support Services and Supplies

As directed in specific task orders, the Contractor will be required to provide other support related services and products. The items and assistance include, but are not limited to:

(a) Studies into unexpected technical problems or advances
  (1) Written reports and analyses
  (2) Oral reports and briefings

(b) Quick Reaction Supplies and Services
  (1) Special purpose microcomputer hardware or software
  (2) Special purpose textbooks and technical manuals
  (3) Specialized training on PTO components
  (4) Materials for special purpose and emergency briefings
  (5) Facilities for conferences and meetings that can not be handled by existing PTO or Contractor facilities

(c) Follow-on Support
- (1) Consulting services for delivered services and products
- (2) Expansion of delivered products

(d) Other Support
- (1) Participate in Government-led information dissemination activities (e.g., briefings, professional development seminars, conferences) related to contract activities
- (2) Development and implementation facilities
- (3) Other support and supplies

The following table highlights anticipated distinctions in Other Related Service support to be provided to each system.

| *Solicitation System Classification* | *Differences in Work to be Performed* |
|---|---|
| Enterprise | None |
| Legacy | None |
| Office | None |
| Infrastructure | None |

## C.4 QUALIFICATIONS OF CONTRACTOR PERSONNEL

This subsection describes the requirements specific to the types of contractor personnel needed and the overall education, experience, skills and knowledge requirements for contractor personnel. Directly applicable experience on systems similar in size and scope to those at or contemplated by the PTO is strongly preferred in terms of both overall requirements and of specific staff positions.

### C.4.1 Labor Categories

(a) PTO estimates a requirement for a total of 600,000 hours of effort to be provided by two contractors for each year in the period of performance. Thus, if two contracts are awarded, PTO estimates each of two contractors would provide 300,000 hours of effort each year, pursuant to the task order allocation provision specified in Section G.8. The exact mix needed across various life cycle activities and for the four system categories (Enterprise, Legacy, Office, and Infrastructure) cannot be precisely predicted. For the base period of the contract, however, PTO estimates that the distribution of effort among the system categories and management (which includes Product Assurance) is as follows:

| | |
|---|---|
| Enterprise Systems | 35 percent |
| Legacy Systems | 25 percent |
| Office Systems | 10 percent |
| Infrastructure | 10 percent |
| Management | 20 percent |

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(b) PTO reserves the right to shift this distribution as needed to fulfill mission objectives in keeping with budgetary constraints.

(c) The SDM Contractors shall provide technical staff comprised of professionals in program management, technical project leadership, and a range of information systems disciplines. The table below provides labor categories and the estimated total number of hours required per year for the contract for each contractor . It is PTO's intent to allocate these estimated hours equally across two contractors, after initial ramp up, with each contractor providing the following:

| Labor Category | Hours each year |
|---|---|
| Program Manager (Key) | 2,000 |
| Project Manager (Key) | 4,000 |
| Principal Transition Project Manager (Key) | 2,000 |
| Principal Software Engineer (Key) | 2,000 |
| Senior Software Engineer | 16,000 |
| Junior Software Engineer | 6,000 |
| Senior Communications Engineer | 8,000 |
| Operations Research Analyst | 12,000 |
| Principal Systems Engineer (Key) | 2,000 |
| Senior Systems Engineer | 16,000 |
| Principal Information Engineer (Key) | 2,000 |
| Principal Business Process Engineer (Key) | 2,000 |
| Senior Information Engineer/Business Process Engineer | 10,000 |
| Junior Information Engineer/Business Process Engineer | 6,000 |
| Database Specialist | 10,000 |
| Senior Information Systems Specialist | 18,000 |
| Junior Information Systems Specialist | 6,000 |
| Principal Systems Analyst/Programmer (Key) | 2,000 |
| Senior Systems Analyst/Programmer | 62,000 |
| Junior Systems Analyst/Programmer | 76,000 |
| Systems Programmer | 8,000 |
| Subject Matter Specialists | 8,000 |
| Library Scientist or Computer Specialist (Document/Technical Publications) | 2,000 |
| Technical Writer/Editor | 6,000 |
| Administrative and Clerical Staff | 12,000 |
| Total | 300,000 |

The Contractor will be required to provide staff to perform all the work described in previous subsections of this solicitation. The staff provided shall collectively have the education, experience, skills and knowledge, and other qualifications to successfully complete the work in a cost effective manner.

## C.4.2 General Personnel Qualifications

### C.4.2.1 General Requirements

(a) All contractor personnel shall have access to word processing and other office automation applications compatible to those used at PTO. Refer to section F.5 for the office automation applications located on PTOnet as of the release of the RFP.

(b) As specified within task orders, PTO will require contractor personnel, either individually or collectively, who perform life cycle activities for Enterprise Systems to have specific skills/knowledge in Standardized Graphic Markup Language (SGML), Electronic Data Interchange, Optical Character Recognition (OCR), document management systems, image processing, workflow systems, text databases and search engines, image databases, communications protocols, and application programming interfaces (APIs).

(c) As specified within task orders, PTO will require contractor personnel, either individually or collectively, who perform software maintenance for Legacy Systems to have experience in legacy system maintenance, application monitoring and diagnostic tools, text databases and search engines, image databases, APIs, image processing, SQL, accounting and financial databases, order entry systems, audio response systems, data distribution and photocomposition, and OCR. Contractor software maintenance personnel shall have demonstrated skill and ability in the programming and database languages of the systems to be maintained.

(d) As specified within task orders, PTO will require contractor personnel, either individually or collectively, who perform life cycle activities for Office Systems to have specific skills/knowledge in local area network (LAN) and desktop COTS architectures, data structures, operating system capabilities, interfaces, programming languages and function libraries; and experience in LAN and desktop COTS integration and application development, including database systems and interfaces with enterprise database management systems.

(e) As specified within task order(s), PTO will require contractor personnel, either individually or as a group, who perform life cycle activities for Infrastructure Systems to have specific skills/knowledge associated with Enterprise Systems (C.4.2.1(b)), Legacy Systems (C.4.2.1(c)), and/or Office Systems (C.4.2.1(d)).

(f) Collectively, contractor personnel responsible for performing life cycle activities and engineering support shall possess general technical skills, to include:

(1) knowledge and experience in business process reengineering principles, methods, and tools

(2) experience in formulating and implementing software engineering and quality assurance programs

(3) knowledge and experience in standards-based architectures for common use across an enterprise; knowledge and experience in the specific hardware platforms and architectures the PTO will use for a particular system

(4) demonstrated ability with client-server systems

(5) detailed working knowledge and experience in modern software engineering principles, concepts, methodologies, and tools, to include:

a. Information engineering

b. End-user tools appropriate to the system (e.g., work flow packages, forms management packages)

c. Development tools which can package the business area analyses, the data and process information needed for architectural analyses, design, and code development

d. Integrated CASE (ICASE) and CASE systems generally, as defined by the life cycle documentation, and as specified in task orders

(6) knowledge and experience in system development models and process

(7) knowledge and experience in data and process modeling principles, concepts, methodologies, and tools

(8) knowledge and experience in data management theory and techniques

(9) demonstrated ability in information systems development planning, analysis and design, development, test and integration, and transition to operations

(10) knowledge and experience in interface engineering principles and concepts

(11) knowledge and experience in the design, development, test and integration, and transition to operations of network-based applications

(g) The PTO will not provide or pay for training, conferences, or seminars to be given to the contractor personnel in order for them to perform their tasks, with the exception of PTO-specific and specialized training not obtainable outside the PTO (e.g., patent examination process class). The contractor is expected to provide trained, knowledgeable

personnel according to the requirement of the Task Order. If it is determined during the performance of the Task Order that training, conferences, or seminars not specified in the Task Order is required, only the Contracting Officer may approve that training.

### C.4.2.2 Education

(a) The contractor shall supply personnel meeting the educational qualifications specified for each labor category.

(b) All degrees must be from a fully accredited college or university, or candidate must be prepared to show that degrees from other institutions are equivalent or better.

(c) PTO will consider, on a case-by-case basis, acceptance of personnel whose degree(s) do(es) not fall within the fields specified within each labor category description. The contractor shall clearly identify that the individual's degree field does not meet PTO specifications, and shall provide justification supporting a request for a waiver from the degree field specification for that individual.

(d) Substitution of experience for education, and education for experience, is allowed as follows:

(1) Experience may be substituted for education when that experience is specialized, hands-on, and directly related to functions to be performed in a particular work area. Such experience may be substituted for education as follows:

a. 6 years of experience represents a Bachelor's degree

b. 3 years of experience plus a Bachelor's degree represents a Master's degree

(2) No substitution of experience for a Bachelor's degree may be made when the education requirement specifies Master's degree. Experience used to substitute for education shall be in addition to experience required for the position.

### C.4.2.3 Experience

Directly related college study resulting in a degree may be substituted for experience as follows:

(a) 1 year of college represents 9 months of general experience

(b) 3 years of college represents 2 years of general experience

(c) A Master's degree may be substituted for one year of experience if the education requirement specifies Bachelor's degree.

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### C.4.2.4 Key Personnel

(a) Key personnel shall be full time on this contract. In accordance with Section H, key personnel shall include:

(1) Program Manager

(2) Two (2) Project Managers qualified to oversee multiple projects/tasks in a combination of work areas

(3) Principal Project Manager for transition (to manage phase-in from existing contracts, and implementation and transition of existing systems to future systems)

(4) Principal Software Engineer

(5) Principal Systems Engineer

(6) Principal Information Engineer

(7) Principal Business Process Engineer

(8) Principal Systems Analyst/Programmer

(b) All key personnel must have at least 3 years experience managing work similar to that of this contract in their respective area.

### C.4.3 Specific Personnel Qualifications

The following labor categories and functional requirements have been provided for evaluation purposes. Please note that the titles of these categories are illustrative only. It is not required that the Contractor provide personnel with these exact titles; rather, personnel shall meet the requirements listed below.

The following definitions apply to the labor category descriptions:

(a) General Experience: Minimum years in information technology functions or related labor category positions.

(b) Specific Experience: Minimum experience required related to the particular labor skill category and level. This experience is not in addition to, but is part of, the minimum experience required in General Experience.

## C.4.3.1 Program Manager (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in managing substantial contract support services involving multiple projects and personnel. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Electrical Engineering, Information Systems Management, Business Administration or other related discipline.

General Experience

15 years of general and progressively-responsible experience managing information systems design, development, implementation, and operation.

Specific Experience

At least 10 years of specialized experience in systems development, from inception to deployment; and demonstrated ability to provide guidance and direction in the tasks similar to the sample tasks provided in the statement of work. At least 5 years experience managing similar multi-task contracts of this type and complexity, and proven expertise in the management and control of resources. At least 4 years experience supervising personnel. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management. Experience and knowledge in subcontractor management, quality assurance metrics and techniques, and configuration management tools.

Function

Shall be responsible for the overall contract performance and shall not serve in any other capacity under this contract. Organizes, plans, directs, staffs, and coordinates the overall program effort; manages contract and subcontract activities as the authorized interface with the Contracting Officer, COTR, Government management personnel, and customer agency representatives; ensures compliance with Federal rules and regulations. Shall have demonstrated communications skills with all levels of management. Establishes and alters (as necessary) management structure to effectively direct contract support activities. Meets and confers with PTO management and technical personnel regarding the status of specific Contractor activities and problems, issues, or conflicts requiring resolution. Shall be capable of negotiating and making binding decisions for the company.

## C.4.3.2 Project Manager (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in managing substantial contract support services involving multiple projects and personnel. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, other related engineering or technical discipline, or Business Administration.

General Experience

10 years of general and progressively-responsible experience managing information systems design, development, and maintenance. 6 years of general and progressively responsible experience in technical management and project planning for similar multi-task contracts, and proven expertise in the management and control of resources.

Specific Experience

At least 6 years of specialized experience in systems development and management of similar information systems. At least 3 years experience managing similar multi-task contracts. At least 4 years experience supervising personnel. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management. Experience and knowledge in subcontractor management, quality assurance metrics and techniques, and configuration management tools.

Function

Provides competent leadership and responsible project direction through successful performance of a variety of detailed, diverse elements of system development and maintenance. Simultaneously plans, manages, supervises, and provides technical oversight for multiple highly technical projects/tasks. Directs completion of tasks within estimated time frames and budget constraints. Schedules and assigns duties to subordinates, and formulates and enforces work standards. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. Shall be capable of negotiating and making binding decisions for the company on actual Task Orders under this contract.

## C.4.3.3 Principal Transition Project Manager (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in managing the transition of multiple projects and personnel. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, other related engineering or technical discipline, or Business Administration.

General Experience

10 years of general and progressively responsible experience managing information systems design, development, and transition. 6 years of general and progressively responsible experience in technical management and project planning for similar multi-task contracts, and proven expertise in the management and control of resources.

Specific Experience

At least 6 years of specialized experience in transition of similar information systems. At least 4 years experience supervising personnel. At least 3 years experience managing similar multi-task contracts. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management. Experience and knowledge in subcontractor management, quality assurance metrics and techniques, and configuration management tools.

Function

Provides competent leadership and responsible project direction through successful performance of a variety of detailed, diverse elements of project transitioning. Simultaneously plans, manages, supervises, and provides technical oversight for the transition of multiple highly technical projects. Directs completion of tasks within estimated time frames and budget constraints. Schedules and assigns duties to subordinates, and formulates and enforces work standards. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. Shall be capable of negotiating and making binding decisions for the company on actual Task Orders under this contract.

## C.4.3.4 Principal Software Engineer (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in all phases of software engineering. Has extensive experience in the specific software engineering discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing software engineering and design. 4 years of general and progressively responsible experience in technical management and project planning for software engineering tasks. Proven ability to work independently or under only general direction on complex information engineering problems; may work as a team member.

Specific Experience

At least 5 years specialized experience in all aspects of system engineering, to include those required by an actual task order proposal. At least 4 years experience supervising personnel. At least 3 years managing software engineering work similar to that of this contract. At least 2 years specialized experience with software metrics and system effectiveness measurement tools, and process/data modeling methods and tools. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly specialized and technical guidance, to complex software engineering challenges. Simultaneously plans, manages, and provides technical oversight for software engineering activities, including analysis and design; software development cost and schedule estimation; use of accepted software engineering practices, design techniques, and tools; and review of legacy systems. Directs completion of tasks within estimated time frames and budget constraints. Schedules and assigns duties to subordinates, and formulates and enforces work standards. Coordinates with the Program Manager and Project Manager to ensure problem resolution and customer satisfaction. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. May be capable of negotiating and making binding decisions for the company on contract Task Orders.

### C.4.3.5 Senior Software Engineer

General Description

An individual who is very knowledgeable and skilled in all aspects of software engineering. Has substantive experience in the specific software engineering discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing software engineering and design. Demonstrated ability to work independently or under only general direction on complex information engineering problems; may work as a team member.

Specific Experience

At least 5 years specialized experience in all aspects of software engineering, to include those required by an actual task order proposal. At least 2 years specialized experience with software metrics and system effectiveness measurement tools, and process/data modeling methods and tools. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides highly technical and specialized guidance, and solutions to, complex software engineering challenges. Performs software engineering analysis and design; estimates software development costs and schedule; leads system design, development, and integration activities using accepted software engineering practices (e.g., Failure Mode, Effect, and Criticality Analysis (FMECA), metrics and measurement), design techniques, and CASE/ICASE tools; reviews legacy systems and assists in making refinements, reducing operating time, and improving current techniques; and designs and implements software tools and subsystems. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

Examples

Quality Assurance or Configuration Management Specialist

### C.4.3.6 Junior Software Engineer

General Description

An individual knowledgeable in software engineering. Has experience in the specific software engineering discipline(s) described in an actual task order proposal. Demonstrates good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Engineering, or other related engineering or technical discipline.

General Experience

4 years of general and progressively responsible experience performing software engineering and design.

Specific Experience

At least 3 years of specialized in highly specialized information processing disciplines involving a range of hardware and software solutions. At least 2 years of concentrated, hands-on experience in software engineering, to include the specific discipline(s) required by an actual task order proposal.

Function

Provides technical and specialized solutions to complex software engineering challenges, and provides support to the less technical disciplines such as data entry and verification. Performs software engineering analysis and design; estimates software development costs and schedule; leads system design, development, and integration activities using accepted software engineering practices (e.g., Failure Mode, Effect, and Criticality Analysis (FMECA), metrics and measurement), design techniques, and CASE/ICASE tools; reviews legacy systems and assists in making refinements, reducing operating time, and improving current techniques. Typically required to work as a team member under the close supervision and direction of senior personnel. May interface with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.7 Senior Communications Engineer

General Description

An individual who is very knowledgeable and skilled in all aspects of telecommunications (e.g., hardware, software, and networks). Has substantive experience in the specific telecommunications discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Electrical Engineering, Telecommunications or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience in all aspects of network and computer communications hardware, software, and networks. Demonstrated ability to work independently or under only general direction on complex telecommunications problems; may work as a team member.

Specific Experience

At least 5 years specialized and direct experience in analyzing, designing, developing, and testing similar communication technologies and networks; using and implementing network and communications standards; and identifying and resolving communications hardware, software, or network problems. At least 3 years in technical leadership capacity on similar efforts, and concentrated, hands-on experience in all aspects of the specific telecommunications area(s) required by an actual task order proposal. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly technical and specialized guidance and solutions, to complex telecommunications challenges. Analyzes network and computer communications hardware and software characteristics; recommends equipment and network procurement, removals, and modifications; adds, deletes, and modifies (as required) host, terminal, and network devices; analyzes and implements communications standards and protocols according to requirements; designs and optimizes network configurations; and plans installations, transitions, and cutovers of network components and capabilities. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.8 Operations Research Analyst

General Description

An individual who is very knowledgeable and skilled in all aspects of operations research analysis. Has substantive experience in the specific operations research discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Operations Research, Information Systems, Mathematics, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing operations research analyses. Demonstrated ability to work independently or under only general direction on complex operations research problems; may work as a team member.

Specific Experience

At least 5 years specialized experience in all aspects of operations research, to include those required by an actual task order proposal. 2 years specialized experience with similar architectural and operational concepts (e.g., POSIX, GOSIP, CASE, SGML), simulation and modeling, software metrics and system effectiveness measurement tools, and process/data modeling methods and tools. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides highly technical and specialized guidance, and solutions to, complex operations research challenges. Performs analyses, studies, and reviews for architecture and system life cycle activities; performs quantitative studies of system performance and work flow metrics, including the economic costs and benefits of information technology and work processes; and evaluates analytically and systematically problems and develops appropriate corrective action. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.9 Principal Systems Engineer (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in all phases of systems engineering. Has extensive experience in the specific system engineering discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Operations Research, Information Systems, Mathematics, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing computer systems architecture and engineering. Proven ability to work independently or under only general direction; may work as a team member.

Specific Experience

At least 5 years specialized experience in all aspects of system engineering, to include those required by an actual task order proposal. At least 4 years experience supervising personnel. At least 3 years managing systems engineering work similar to that of this contract. At least 2 years specialized and direct experience with required architectural and operational concepts (e.g., POSIX, CASE, SGML), simulation and modeling, and software metrics and system effectiveness measurement tools. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly specialized and technical guidance, to complex system engineering challenges. Simultaneously plans, manages, and provides technical oversight for system engineering activities. Ensures systems and applications are compliant with standards for open systems architectures, reference models, and profiles; and establishes and directs Quality Assurance and Configuration Management activities program-wide. Directs completion of tasks within estimated time frames and budget constraints. Schedules and assigns duties to subordinates, and formulates and enforces work standards. Coordinates with the Program Manager and Project Manager to ensure problem resolution and customer satisfaction. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. May be capable of negotiating and making binding decisions for the company on contract Task Orders.

### C.4.3.10 Senior Systems Engineer

General Description

An individual who is very knowledgeable and skilled in all aspects of system engineering. Has substantive experience in the specific system engineering discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Operations Research, Information Systems, Mathematics, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing computer systems architecture and engineering. Demonstrated ability to work independently or under only general direction; may work as a team member.

Specific Experience

At least 5 years specialized experience in all aspects of system engineering, to include those required by an actual task order proposal. 2 years specialized and direct experience with similar architectural and operational concepts (e.g., POSIX, GOSIP, CASE, SGML), simulation and modeling, software metrics and system effectiveness measurement tools, and process/data modeling methods and tools. At least 3 years in technical leadership capacity on similar efforts. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides highly technical and specialized guidance, and solutions to, complex system engineering challenges. Performs analyses, studies, and reviews for architecture, standards, and system life cycle activities; evaluates analytically and systematically problems of workflows, organization, planning, interoperability, portability, and scalability and develops appropriate corrective action; and ensures systems and applications are compliant with standards for open systems architectures, reference models, and profiles as they apply to the specification and implementation of solutions on the application platform, across the application program interface, and the external environment/software application. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.11 Principal Information Engineer (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in all phases of information engineering. Has extensive experience in the specific information engineering discipline(s) described in an actual task order proposal. Demonstrates exceptional oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Information Engineering, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing information systems development, functional and data requirements analysis, information engineering, and systems analysis and design. Proven ability to work independently or under only general direction on complex information engineering problems; may work as a team member.

Specific Experience

At least 4 years specialized experience managing the implementation of information engineering projects, and using data and process modelling. At least 4 years experience supervising personnel. 2 years specialized and direct experience using information engineering techniques for similar efforts. Experience in the use of information engineering and business process reengineering tools. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly specialized and technical guidance, to complex information engineering challenges. Simultaneously plans, manages, and provides technical oversight for information engineering activities. Directs completion of tasks within estimated time frames and budget constraints. Applies an enterprise-wide set of disciplines for the planning, analysis, design, and construction of information systems on an enterprise-wide basis or across a major sector of the enterprise; performs enterprise-wide strategic systems planning, business information planning, and business analysis; performs data and process modelling using both manual and automated tools; applies reverse engineering and reengineering disciplines; performs in-depth reengineering analyses of existing work flow and information systems, designing alternative approaches; and provides technical guidance in software engineering techniques and automated support tools. Coordinates with the Program Manager and Project Manager to ensure problem resolution and customer satisfaction. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. May be capable of negotiating and making binding decisions for the company on actual Task Orders under this contract.

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## C.4.3.12 Principal Business Process Engineer (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in all phases of business process reengineering. Has extensive experience in the specific business process reengineering discipline(s) described in an actual task order proposal. Demonstrates exceptional oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Information Engineering, Information Systems, Management Information Systems, Business Administration, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing information systems development, functional and data requirements analysis, information engineering, and systems analysis and design. Proven ability to work independently or under only general direction on complex information engineering problems; may work as a team member.

Specific Experience

At least 4 years specialized experience managing business process reengineering projects, to include planning for and implementing transition. At least 4 years experience supervising personnel. 2 years specialized and direct experience using business process reengineering and change management techniques for similar efforts. Experience in the use of business process reengineering and information engineering tools. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly specialized and technical guidance -- covering a range of modeling, analytical, and decision/group meeting support tools and techniques -- to complex business process reengineering challenges. Simultaneously plans, manages, and provides technical oversight for business process reengineering activities. Facilitates and leads reengineering or visioning sessions, as required; directs staff of facilitators working on specific business process reengineering projects; and directs completion of tasks within estimated time frames and budget constraints. Performs enterprise-wide strategic planning, business information planning, and business analysis; conducts data and process modelling using both manual and automated tools; establishes and applies metrics; performs in-depth reengineering analyses of existing work flow and information systems, designing alternative approaches; conducts economic, benchmarking, and best practices analyses; and applies proven human resource change management techniques to affected areas. Coordinates with the Program Manager and Project Manager to ensure problem resolution and customer satisfaction. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. May be capable of negotiating and making binding decisions for the company on actual Task Orders under this contract.

## C.4.3.13 Senior Information Engineer/Business Process Engineer

This labor category description covers two types of personnel -- one whose principle role is of an information engineering nature, and one whose principle role is of a business process reengineering nature. PTO does not require that the same individual possess experience and skills related to both roles.

General Description

An individual who is very knowledgeable and skilled in all phases of information engineering or business process reengineering. Has substantive experience in the specific information engineering or business process reengineering discipline(s) described in an actual task order proposal. Demonstrates excellent oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Information Engineering, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing information systems development, functional and data requirements analysis, information engineering, and systems analysis and design. Demonstrated ability to work independently or under only general direction on complex information engineering or business process reengineering problems; may work as a team member.

Specific Experience

At least 4 years specialized experience in all aspects of information engineering or business process reengineering, to include those required by an actual task order proposal. 2 years specialized and direct experience using business process reengineering or information engineering techniques for similar efforts. At least 3 years in technical leadership on similar projects. Experience in the use of business process reengineering or information engineering tools. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides highly technical and specialized guidance, and solutions to, complex information engineering or business process reengineering challenges requiring a range of modeling, analytical, and decision/group meeting support tools and techniques. Applies information engineering or business process reengineering methodologies/principles; facilitates decision/group meetings, applying change management techniques as appropriate; performs, as appropriate, strategic planning, visioning, activity and data modelling, transaction flow analysis, internal control and risk analysis, economic analysis, benchmarking, best practices analysis, and modern business methods and performance measurement techniques using both manual and automated tools; develops and applies organization-wide information models for use in designing and building integrated, shared software and database management systems; assists in performing in-depth reengineering analyses of existing work flow and information systems, designing alternative approaches; and performs reverse engineering and reengineering activities. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

Examples

Facilitator, Senior Business Engineer

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## C.4.3.14 Junior Information Engineer/Business Process Engineer

This labor category description covers two types of personnel -- one whose principle role is of an information engineering nature, and one whose principle role is of a business process reengineering nature. PTO does not require that the same individual possess experience and skills related to both roles.

General Description

An individual knowledgeable in information engineering or business process reengineering. Has experience in the specific information engineering or business process reengineering discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Engineering, or other related engineering or technical discipline.

General Experience

4 years of general and progressively responsible experience performing information processing, information engineering, or business process reengineering.

Specific Experience

At least 3 years of specialized experience in highly specialized information processing disciplines involving a range of hardware and software solutions. At least 2 years of concentrated, hands-on experience in the information engineering or business process reengineering life cycle, to include the specific discipline(s) required by an actual task order proposal. At least 2 years of concentrated experience in documenting information engineering or business process reengineering results.

Function

Provides technical and specialized solutions to complex information engineering or business process reengineering challenges, and provides support to the less technical disciplines such as tool operation, data entry and verification, and media duplication. Performs information engineering or business process reengineering practices and analysis; comprehends business-oriented concepts and "translates" concepts, populating automated tools with the "translated" information; performs, as appropriate, strategic planning, visioning, activity and data modelling, transaction flow analysis, internal control and risk analysis, economic analysis, benchmarking, best practices analysis, and modern business methods and performance measurement techniques using both manual and automated tools; participates in performing in-depth reengineering analyses of existing work flow and information systems, designing alternative approaches; and performs assigned reverse engineering and reengineering activities. Typically required to work as a team member under the close supervision and direction of senior personnel. May interface with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

Examples

Junior Business Area Analysis Specialist
Junior Business System Design Specialist
Information Engineering Tool Operator
Business Process Reengineering Tool Operator

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## C.4.3.15 Database Specialist

General Description

An individual who is very knowledgeable and skilled in all phases of database management systems design, construction, and operation. Has substantive experience in the database work described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

An advanced degree (minimally Master's) in the fields of Computer Science, Computer Engineering, Library Science, Information Engineering, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing database development, database requirements analysis, information engineering, and systems analysis and design. Demonstrated ability to work independently or under only general direction on complex database problems; may work as a team member.

Specific Experience

At least 4 years specialized experience in all aspects of database systems, to include those required by an actual task order proposal. 2 years direct, in-depth experience with commercial database software. At least 3 years in technical leadership on similar projects.

Function

Provides highly technical and specialized guidance, and solutions to, complex database management challenges. Applies analysis methodologies and principles; applies, as appropriate, activity and data modelling, and modern performance measurement techniques; develops and applies predictive models for use in planning, designing, and building integrated, shared software and database management systems. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

Examples

Database Analyst
Database Designer
Database Administrator

## C.4.3.16 Senior Information Systems Specialist

General Description

An individual who is very knowledgeable and skilled in all aspects of information systems. Has extensive experience in the specific information systems discipline(s) described in an actual task order. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Systems, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience in the field of information processing or information systems planning, design, and development. Demonstrated ability to work independently or under only general direction on complex information systems problems; however, may also work as a member of a team.

Specific Experience

At least 6 years specialized and direct experience developing functional requirements for complex, integrated automated information systems; and performing life cycle systems analyses, studies, and reviews. At least 6 years of specialized experience in numerous, highly specialized, information processing disciplines involving a wide range of hardware and software solutions. At least 3 years in technical leadership capacity on similar efforts. At least 4 years of concentrated, hands-on experience in all aspects of the specific information systems disciplines required by an actual task order proposal. Demonstrated experience in joint application development, and rapid prototyping and CASE technology concepts and techniques. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly technical and specialized guidance, to complex information systems challenges. Performs system life cycle analyses, studies, and reviews (includes requirements determination, vendor surveys, and acquisition assistance for incidental resources); and supports system deployment, to include installation, checkout, testing, and transition to operations. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.17 Junior Information Systems Specialist

General Description

An individual knowledgeable in information systems. Has experience in the specific information systems discipline(s) described in an actual task order proposal. Demonstrates good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Systems, or other related engineering or technical discipline.

General Experience

4 years of general and progressively responsible experience in information processing or information systems planning, design, and development.

Specific Experience

At least 3 years specialized experience in information processing disciplines involving a range of hardware and software solutions. At least 2 years of concentrated experience in the specific discipline(s) required by an actual task order proposal. At least 2 years of concentrated experience in documenting information systems discipline(s) results. Demonstrated experience in joint application development, and rapid prototyping and CASE technology concepts and techniques.

Function

Performs system life cycle analyses, studies, and reviews (includes requirements determination, vendor surveys, and acquisition assistance for incidental resources); applies process improvement and business reengineering methodologies and principles to conduct process modernization projects; develops process and data models for use in designing and building integrated, shared software and database management systems; and supports system deployment, to include installation, checkout, testing, and transition to operations. Typically required to work under the close supervision and direction of senior personnel. Works independently or as a member of a team. May interface with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.18 Principal Systems Analyst/Programmer (KEY PERSONNEL)

General Description

An individual who is extremely knowledgeable and skilled in all aspects of information systems analysis and programming. Has extensive experience in the specific analysis and programming discipline(s) described in an actual task order. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Systems, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing systems analysis and programming. Proven ability to work independently or under only general direction on complex information systems problems; may also work as a member of a team.

Specific Experience

At least 6 years specialized and direct experience in numerous information processing disciplines involving a wide range of hardware and software solutions, to include data base management and use of programming languages such as Cobol, 4GL, and object-oriented. At least 4 years experience supervising personnel. At least 4 years of concentrated, hands-on experience in all aspects of the specific systems analysis and programming disciplines required by an actual task order proposal. At least 3 years managing systems analysis/programming work similar to that of this contract. Knowledge of current storage and retrieval methods and demonstrated ability to formulate specifications for computer programmers to use in coding, testing, and debugging activities. Thorough understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and administrative direction, to complex information systems challenges. Simultaneously plans, manages, and provides technical oversight for system analysis and software development activities. Directs completion of tasks within estimated time frames and budget constraints. Schedules and assigns duties to subordinates, and formulates and enforces work standards. Coordinates with the Program Manager and Project Manager to ensure problem resolution and customer satisfaction. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives. May be capable of negotiating and making binding decisions for the company on actual Task Orders under this contract.

## C.4.3.19 Senior Systems Analyst/Programmer

General Description

An individual who is very knowledgeable and skilled in all aspects of information systems analysis and programming. Has substantive experience in the specific analysis and programming discipline(s) described in an actual task order. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Systems, or other related engineering or technical discipline.

General Experience

8 years of general and progressively responsible experience performing systems analysis and programming. Demonstrated ability to work independently or under only general direction on complex problems; may also work as a member of a team.

Specific Experience

At least 6 years specialized and direct experience in numerous information processing disciplines involving a wide range of hardware and software solutions, to include data base management and use of programming languages such as Cobol, 4GL, and object-oriented. At least 4 years of concentrated, hands-on experience in all aspects of the specific systems analysis and programming disciplines required by an actual task order proposal. At least 3 years in technical leadership capacity on similar efforts. Knowledge of current storage and retrieval methods and demonstrated ability to formulate specifications for computer programmers to use in coding, testing, and debugging activities. Understanding and knowledge of the principles and methodologies associated with program management, contractor management, and financial management.

Function

Provides competent leadership, and highly technical and specialized guidance, to complex information systems challenges. Analyzes, designs, codes, and tests system software components, databases, and applications possessing a wide range of capabilities. Develops plans; analyzes the problem and information to be processed; defines the problem, and develops system requirements and program/technical specifications; develops programs; tests, debugs, and refines the software; prepares program- and customer-level documentation; enhances and maintains software; and provides technical direction to junior programmers. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.20 Junior Systems Analyst/Programmer

General Description

An individual knowledgeable in systems analysis and programming. Has experience in the specific analysis and programming discipline(s) described in an actual task order proposal. Demonstrates good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Computer Engineering, Information Systems, or other related engineering or technical discipline.

General Experience

4 years of general and progressively responsible experience in systems analysis/programming.

Specific Experience

At least 3 years specialized experience in analysis and programming disciplines involving a range of hardware and software solutions. At least 2 years of concentrated experience in the specific discipline(s) required by an actual task order proposal, and 1 year of design and programming of moderately complex information systems. Demonstrated experience in rapid prototyping and CASE technology concepts and techniques.

Function

Performs analysis, design, coding, and testing for system software components, databases, and applications possessing a wide range of capabilities (e.g., engineering, business, and records management functions); develops requirements and technical specifications; prepares program-level and customer-level documentation; assists senior analysts in preparing input and test data for the proposed system; and enhances and maintains software. Typically required to work under the close supervision and direction of senior personnel. Works independently or as a member of a team. May interface with Government management and technical personnel including, but not limited to, the Contracting Officer and Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.21 Systems Programmer

General Description

An individual who is very knowledgeable and skilled in all aspects of systems programming. Has substantive experience in the specific systems programming discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Computer Science, Information Systems, or other related technical discipline.

General Experience

6 years of general and progressively responsible experience performing systems programming. Demonstrated ability to work independently or under only general direction on complex information systems problems; may also work as a member of a team.

Specific Experience

At least 4 years specialized and direct experience analyzing and programming of operating systems, and at least 4 years of concentrated, hands-on experience in all aspects of the specific systems programming disciplines required by an actual task order proposal.

Function

Provides competent leadership, and highly technical and specialized guidance, to complex systems programming challenges. Performs analysis, design, coding, and testing of operating system and utility program components of automated information systems; and modifies and maintains existing software as well as creates special-purpose software to endure efficiency and integrity between systems and applications. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

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## C.4.3.22 Subject Matter Specialists

General Description

An individual whose knowledge and skills are applicable to an actual Task Order proposal and so recognized in the professional community that the Government is able to qualify the individual as an expert in the field. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in appropriate subject matter fields or related disciplines, as defined within the task order.

General Experience

6 years of general and progressively-responsible subject matter experience, as required by an actual task order, in similar federal work environments.

Specific Experience

At least 4 years of concentrated, hands-on experience in the specific discipline of the subject matter field required by an actual task order.

Function

Performs as a consultant in highly specialized subject areas such as personnel (Federal Government), training, patents, trademarks, and finance. Provides highly technical and/or specialized guidance concerning automation solutions to complex information processing problems related to the subject matter field; performs analyses and studies; prepares reports and gives presentations; works independently or as a member of a team. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

Examples

Federal Personnel Expert
Training Expert
Patent or Trademark Attorney
Financial Expert
Organizational Development Expert
Software/hardware Contracting Expert

## C.4.3.23 Library Scientist or Computer Specialist (Document/Technical Publications)

General Description

An individual who is knowledgeable in information search and retrieval. Has substantive experience in the specific library science discipline(s) described in an actual task order proposal. Demonstrates very good oral and written communications skills.

Education

A Bachelor's degree in the fields of Library Science, Information Systems, Computer Science, and related technical disciplines.

General Experience

6 years of general and progressively responsible experience in the field of library science and/or information search and retrieval. Demonstrated ability to work independently or under only general direction on complex information systems problems; may also work as a member of a team.

Specific Experience

At least 4 years of concentrated, hands-on experience in all aspects of information search and retrieval disciplines required by an actual task order proposal, to include search mechanisms, commercial retrieval systems and software, and commercial information services.

Function

Provides highly technical and specialized guidance to complex information retrieval challenges. Plans information systems and services; performs analysis and design of information search and retrieval systems, to include writing customer requirements, technical requirements, and technical/system specifications; and analyzes retrieval systems for multiple-format materials. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.24 Technical Writer/Editor

General Description

An individual who is extremely knowledgeable and skilled in technical documentation and presentation techniques, to include technical writing, technical proofreading, and technical editing. Demonstrates excellent command and articulation of the English language. Has superior grammatical skills.

Education

A Bachelor's degree in the fields of Information Systems, or English/Writing supplemented by formal courses in Management Information Systems, Computer Science, and related technical disciplines.

General Experience

6 years of general and progressively responsible experience in technical writing and document preparation. Demonstrated ability to work independently or under only general direction.

Specific Experience

At least 4 years of specialized experience in information systems technical writing and document preparation.

Function

Assists in collecting and organizing information required for preparation of deliverables; ensures the use of proper technical terminology; performs technical writing, editing, proofreading, and integration of computer-based material to produce document deliverables; and translates technical information into clear, readable documents to be used by technical and non-technical personnel. Interfaces with Government management and technical personnel including, but not limited to, the Contracting Officer's Technical Representative. Reports in writing and orally to Contractor management and Government representatives.

## C.4.3.25 Administrative/Clerical Staff

General Description

An individual knowledgeable in computer-based documentation and presentation techniques, technical typing, and word processing. Demonstrates excellent command and articulation of the English language. Has superior grammatical skills.

Education

High school or equivalent. Trained to use a microcomputer and commonly accepted software packages for word processing, spreadsheets analysis, and data base management; and use other office equipment such as facsimile machines and copiers. Graphics person(s) should also be trained to use commercial graphics software such as Microsoft PowerPoint.

General Experience

3 years of general and progressive experience in information systems technical typing and documentation.

Specific Experience

Graphics person(s) should have at least two years experience in developing graphics/artistic presentations for publications and documents (preferably technical documentation). Experience with desktop publishing software is desirable.

Function

Supports the development of all contract deliverables, to include the preparation of documentation to be furnished as deliverable(s). Provides administrative support such as technical typing, editing of word processing and other computer manuscripts, integration of various sources into a cohesive product which will be delivered as computer-based magnetic media, preparation of graphical and narrative presentation material. Works as part of a team.

## C.5 MEETINGS

C.5.1 The PTO will conduct three types of regularly scheduled meetings:

(a) Weekly meeting with COTR and other CIO staff to discuss contractual issues, task order status, other high level issues, etc.

(b) Comprehensive Status Review, which is an in-depth review of all of the on-going task orders, held at least twice every Award Fee Period. The COTR will determine the date/time for the review and will also determine if additional reviews are required. The Contractor will provide data for the review, as specified by the COTR.

(c) Each Task Manager holds status meetings with their contractor counterparts on a regular basis (depends on the type of task order -- discrete development task orders require more regular status meetings)

C.5.2 Subjects for discussion at the meetings shall include at a minimum, but are not limited to:

(a) Work completed during the reporting period;

(b) Technical status report on all tasks;

(c) Financial status report on all tasks;

(d) Work schedule for the next reporting period; and

(e) Identification of any problems or delays and recommendations as to their resolution with reference to the problem reports submitted in the interim.

The contractor shall make available necessary technical personnel associated with the project work areas which are related to the topics that are listed in the proposed agenda.

C.5.3 Other meetings between the contractor and the PTO will be held on an "as required" basis during the performance of the contract. The majority of the meetings will be held at the U.S. Patent and Trademark Office, 2121 Crystal Drive (Crystal Park 2), Arlington, Virginia 22202; however meetings may also be held at the contractor's facility when determined appropriate by the COTR. Due to mission critical functions to be performed under this contract, the contractor shall be able to attend any meeting called by the PTO when given a 30 minute advance notice of such a meeting. As specified in each task order, the Contractor shall prepare and submit written minutes of all meetings in accordance with the format and criteria contained in Section J "Minutes for Meetings" (MTGMIN.DOC).

## C.6 BRIEFINGS

The Contractor shall prepare and present briefings to the Government on the results of efforts undertaken under this contract. Schedules for presentation of these briefings will be specified in task orders.